WHAT IS THE VALUE OF

HUMAN CONTACT?

THE *cost* of telephoning is as little as it can be made. Its *value* can be infinite.

If it is worth your while to save time, to be in touch with people at a distance, to do business quickly, to keep in touch with friends and family—if such things have a value, the telephone holds limitless possibilities for you.

It is the means of extending your personality. Unlike commodities, telephone calls cannot be made wholesale. Each one is a personal service. Each goes when and where you wish. At your request you have five thousand or five million dollars' worth of property at your command, two or three people or perhaps a hundred attending the wires along which your voice travels. It is the work of the Bell System to do this well and cheaply. Its hundreds of thousands of trained workers must keep every part of its 4000 million dollars' worth of equipment ready for instant use.

Here is a business run on the smallest margin of profit consistent with service, security and expansion. Its operation and maintenance have the benefit of the continual research of the 5000 members of Bell Laboratories, the general and technical staff work of the American Telephone and Telegraph Company, and the production economies effected by Western Electric.

Every resource of the Bell System is devoted to making your service clear, quick and inexpensive. As new telephones are added, as improvements are made, you get constantly greater satisfaction and value.

★ *AMERICAN TELEPHONE AND TELEGRAPH COMPANY* ★

Entered as second-class matter at the Post-Office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918

Photograph by V. Akers

"OCTOBER AFTERNOON"

AMERICAN FORESTS

OVID BUTLER, Editor

L. M. CROMELIN and ERLE KAUFFMAN, Assistant Editors

Published Monthly—35 cents a copy—$4.00 a year

1727 K Street Northwest
WASHINGTON, D. C.

Vol. 37 OCTOBER, 1931 No. 10

CONTENTS

COVER—
"AUTUMN WINGS"
Photograph by H. ARMSTRONG ROBERTS

SONG OF WILD PLACES
Poem by HUGH B. CAVE 578

TREASURE TROVE
By BEN AMES WILLIAMS 579

"THE FOREST THAT FIRE MADE"
By S. W. GREENE 583

FIRES SWEEP WESTERN FORESTS 585

TIMBERLINE TRAILS
By ROBERT I. HEWITT 586

A FOREST THAT "JUST GROWED"
By T. J. MOSLEY 589

A CHIP OFF THE OLD BLOCK
By WILLIAM H. HOBSON 592

FOXFIRE
By H. J. DODD 595

THE ECONOMIC STATUS OF SOUTHERN PINE
By HENRY E. HARDTNER 596

THE SMARTEST THING MY DOG EVER DID
By JAMES HAY, JR. 599

FERTILIZING SHADE TREES
By HOMER L. JACOBS 601

A SUGGESTED MEMORIAL 604

EDITORIALS 605

CAMP FIRE TALES—
The Lost Hunter of Lake Chelan
By GLENN E. MITCHELL 606

A CITY MAN TRIES FORESTRY
By CARY A. ROWLAND 608

PRESIDENT REDUCES SEASON ON WATERFOWL 610

FOREST PEOPLE
Giant Pinons Find a Champion
By EUGENE A. HANCOCK 611

A FOREST PAGE FOR BOYS AND GIRLS
Conducted by WAKELIN MCNEEL 613

THE CROSS HAUL
By EVAN SLYTER 615

THROUGH THE LENS—*Short Lessons in Photography for the Outdoorsman*
Conducted by FRED H. KISER 617

EVER THE CHASE
By JOHN C. FROLICHER 619

SAPLING SAM'S SCRAPBOOK 621

AROUND THE STATES 622

ASK THE FORESTER 626

BOOK NEWS AND REVIEWS 636

"WHO'S WHO" AMONG OUR AUTHORS 640

Photograph by Edward C. Quick

MARSH GRASSES

Song of Wild Places

By Hugh B. Cave

Up ho! for the drone of the mallard and drake,
And ho! for the rip of the rain.
Shout ho! for the crackle of bracken and brake,
The marshes are calling again!
With tramping
And stamping
And champing along—
The wild ones are calling again!

Up ho! for the grip of the rod and the pike,
And ho! for the whispering fen.
Shout ho! for the rush of the cast and the strike,
The rivers are calling again!
With winging
And ringing
And flinging along—
The wild ones are calling again!

Up ho! for the wail of the wind in the night,
And ho! for the wilderness lane.
Shout ho! for the song of the storm on the height,
The echoes are calling again!
With railing
And flailing
And wailing along—
The wild ones are calling again!

TREASURE TROVE

By Ben Ames Williams

FIRST ACQUIRED BY THE UNITED STATES GOVERNMENT A CENTURY AGO, BLACKBEARD ISLAND GAVE TREASURE OF GREAT OAKEN TIMBERS FOR NAVAL CONSTRUCTION AND NOW, AS THE AUTHOR POINTS OUT, YIELDS TREASURE OF SANCTUARY FOR WILD LIFE, BUT NEVER THE GLINT OF GOLD NOR GLEAM OF JEWEL OF STORIED HIDDEN PIRATE TREASURE

TALES of treasure have always held a powerful attraction for the imaginative and adventurous man; for they partake of the attributes of fairy tales, since they suggest that fortune may be attained at a bound or by the waving of some magic wand, rather than by long persistence and much fruitful toil. Thus there have been treasures, and treasure seekers, since Adam hoped to discover some peculiar virtue in the forbidden apple.

But there have been few who found treasure when they sought for it; for it needs a wise man to know treasure when he sees it. The fool, alert for the gleam of gold or the sheen of silver or the sparkling brilliance of precious stones, is apt to overlook more authentic treasures which he tosses ruthlessly aside in his voracious search. The French revolutionary mobs burned priceless tapestries to melt out of them the gold thread worth a few francs which they contained. More recently, in Petrograd, whole palaces were torn and wrecked in the search for a few bottles of wine. In California, dredges converted potentially fruitful valleys into tumbled wastes for the sake of the fifteen or twenty cents' worth of gold to be found in every ton of soil. And millions of acres in the lower Mississippi valley are flooded year by year because in the upper watershed, swamps have been drained and forests cut for the immediate profit of the hour.

The hunt for treasure is a madness. A drunken soldier will destroy a priceless Buddhist sculpture for the sake of wrenching out of their sockets the rubies set for eyes. Man, like a child, will always spend his future to serve his immediate desire; he will not wait to erect brick by brick the structure of his life, but seeks to conjure up a mansion, complete and all magnificent, with one word.

Treasure trove and pirates have always been associated in

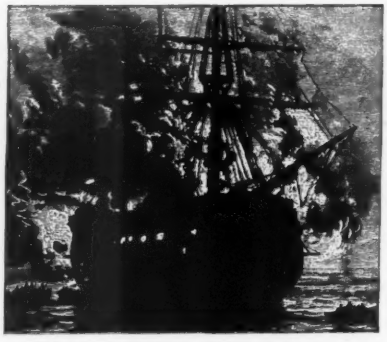
Fairchild Aerial Surveys, Inc.

Forty or fifty miles below Savannah lies the island where Blackbeard—the last and most bloodthirsty and relentless of all the pirates—supposedly buried his treasure trove. The lure of this hidden gold has drawn men for a century or more and a fruitless search for this mythical treasure has ransacked the island from end to end. Now a real treasure has been found there. It offers retreat and bountiful provision for all native forms of wild life and on it has been established a bird reservation and sanctuary.

Copied from an old woodcut

Blackbeard buries his treasure.

the mind; and this is natural enough. For pirates preyed on other men, robbed them of everything of value. Hence, *per se*, the pirates must have amassed treasure. And it follows as the night the day that the pirate hid his treasure, presumably in the sand, with a compass bearing and sixty paces south by east as markers of the spot. Thus the old tales run, with charts to prove them all. Captain Kidd's treasure has been sought, and with diligence, along two thousand miles of coastline; but if Kidd ever actually buried a treasure anywhere, it was more likely than not a cask of wine, left to mature against the hour of need. And the cask is rotted and the sour wine spilled long and long ago.



After looting his prize, the pirate fires the ship.

As a matter of common sense, it is unlikely that pirates buried treasure of any consequence. No man waded through blood to win gold in order that he might bury that gold in the sand on some remote and hidden shore. The gold he won by war, he spent as quickly as might be; for money is of no account save for the things it will buy. And the pirate knew this well; and he knew that his days would be short in the land. So what he had, he spent, and drank the proceeds with a robust and joyous gusto.

Nevertheless, tales of pirate treasure have led men to search every lonely island off the Atlantic Coast; and Blackbeard Island, forty or fifty miles below Savannah, has been ransacked as often as another and perhaps more often. For hereabouts, according to well-attested legend, the pirate Edward Teach had many lurking places. You may still see the careening ground where he would beach his ship and boot-top her bottom; you may still find in the hidden caverns of the wood along the shore a bit of his mooring chain, grown deep into the bark of a great oak tree; you may still hear how in his shallow craft he threaded the shoals off the mouth of Cabaretta Creek and dodged to cover, secure from pursuit by water unless one knew the tortuous channel, and doubly secure from attack by land.

This Teach was a most satisfactorily villainous pirate. His neglect of the uses of a razor, coupled with the ebony hue of the resultant whiskers, gave him his more familiar sobriquet of Blackbeard. He was a man with a sense of the theatric. When he went into battle there were a dozen pistols hung to slings over his shoulders; there were twisted fusees of hemp, burning and sputtering, thrust under the brim of his broad black hat. His beard was braided and beribboned. And not in his appearance alone did he reveal this gift for drama, this touch of saturnine humor. Once when he sat at cards with men of his crew, he set off two pistols under the table; and Israel Hands lost a leg thereby. Robert Louis Stevenson later borrowed Israel's name for his own purposes, and took a leg off Long John Silver and gave it to Israel by way of recompense. And again this Blackbeard shut himself and some of his men in the hold and set alight a bucket of brimstone, and guffawed with delight when the others were by the fumes driven into flight before he himself sought the deck. He married fourteen wives of record, and when he chose, divorced them and re-wed them to his crew. He swaggered off Charleston Harbor, held good citizens for ransom there, sent a boat's crew into the very town to demand his due. And he came to his end at last in Ocracoke Inlet, at the hands of Lieutenant Maynard, and there were some fourteen pistol bullets in his body, and any number of cutlass wounds in his tough hide before he fell.

But Blackbeard used to boast that he had a treasure hid. "The devil and me know where it is," he bragged. "And the one that lives longest of us two shall have it." Chance is, he lied, and stoutly; certainly there is no record of any great loot he ever gathered, and there is proof enough that he spent with a vast prodigality. Yet that was his boast, and men since his time have taken him at his word. But if he buried treasure, then where so likely as on the island where he hid his ship, the island which still bears his name? So Blackbeard has been searched for a century and more. Men have come by scores, and men have come alone and secretly. They came with scrolls, and musty maps, and divining rods of witch hazel or of metal. They probed and peered here and there, and they dug deep pits in the sandy soil till the island was fairly pock-marked from end to end. They wasted

From Abbot's Book of Pirates

With more than twenty wounds, fighting like a tiger in a sea of blood, Blackbeard meets his death.

on the whole enough energy and pains in these pursuits to earn the sum of Blackbeard's possible treasure tenfold, even at day labor's wage. They searched and sweated in the steaming sun—and went away disappointed in the end. No one of them ever found on the island the treasure he hoped to find.

Yet there was treasure there; a treasure that they were too much absorbed to apprehend. For this island is a small and isolated area, almost unchanged by the centuries which have passed since the Spaniard first came to occupy these coasts. It stands today as it stood in the day when the Yamassee and the tribesmen of Guale were its only visitors. The Spaniard built elsewhere his missions and his fortresses; you may still find the strong tabby walls standing along the inland waterways, or hidden in the deep of some great wood. But Blackbeard was to him of small account. Even the Indians had avoided the spot; so did the Spaniard, too.

For it is an island not hospitable to mankind. The soil is sand, blown in through the centuries from the scoured bottom of the sea, and thrust ashore here in furrowed dunes; and the dunes are grown with live oaks and slash pine and palmetto, cabbage palms and holly, cassine and bay and tupelo. And the trees are looped with scuppernongs and muscadines; and the wood is fringed with Baccharis. So the whole forest which clothes the island is a tangled mass and web of vegetation through which even the deer which dwell there must break and weave their sinuous way.

Photographs by the U. S. Biological Survey

In the beautiful tropic interior of the island bird reservation, showing live oaks and palmettos.

Sand dunes along the beach. One hundred years ago these coastal islands were searched for naval timbers, the famous frigate *Constitution* being built in part of oak cut on St. Simons Island, somewhat to the south of Blackbeard.

And in the jungle there live rattlesnakes of an astonishing size, whose sibilant warning is quick to greet the trespasser. Also in the small fresh water ponds, alligators dwell; you may see them motionless on the muddy shores. And on the landward side the island has a belt of marsh, while to the east a shoal beach fronts the sea. It lies protected by these bulwarks against any encroachment, steaming in the sun.

Not hospitable to mankind; but to every other living thing, a haven and a bountiful provision. Along the beach, shore birds by the thousand pause to feed for a while on their northward way in spring, and again when they return southward in the fall. On the marshes, herons and rails, marsh sparrows and wrens live in unmolested contentment. And in the forest itself, the bright cardinal darts like a lance of flame, the hermit thrush sings his evening song, the catbird and the mocking bird are vocal in their seasons, and the towhee and the vireo and the yellowthroat pause here in their migrations to and fro. And in the spring, grackles teeter on the marsh grass and utter their grating, chuckling call in the sun, and the woodpeckers' tattoo rings through the woods. It is possible to tally on this island, in one day's attentive scrutiny, more than sixty varieties of birds, from the great blue heron to the least sandpiper, from the rail to the cormorant, from the red-shouldered hawk to the pert-tailed house wren, here all content and all at home.

And to the beasts as well as to the birds the island is an

Eden, from the small furred things to the antlered deer. The island deer, a small variety of the northern white tail, here abounds in such numbers that mere overflow would serve to stock the coastal forests for miles to the north and south. And this abounding wild life is the true treasure of the place; the treasure worth preserving and protecting against the day when in other spots more readily adapted to the needs of man, all this teeming life will have begun to disappear.

For here, if Blackbeard be not disturbed, the student will be able to come a thousand years from now and find a complete and unique picture in miniature of those vast steaming forests through which De Soto and his nine hundred iron-clad warriors broke their tortuous way, when they set out from Florida North and then West on the long journey that brought them at last to the Mississippi and De Soto to his grave. Elsewhere that virgin wilderness has disappeared. Even in the depths of the Everglades, and in the Okefenokee Swamp, the cypress has been lumbered out or will be; and the hunter has taken his skilful way with the wild things. Thus in the Okefenokee, the alligators are almost gone; and their trails, which were the only thoroughfares through which the swamp men could pole their flat boats, are overgrown and near impassable. But on Blackbeard there is no lumbering, and hunting is forbidden. It stands at present as a sanctuary, preserved against every encroachment by mankind.

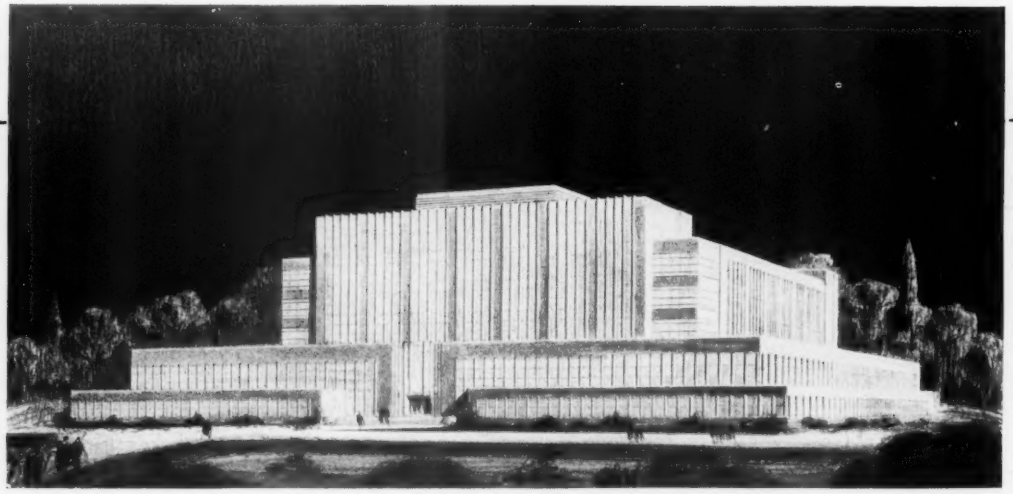
Blackbeard was first acquired by the United States Government a century ago, when for the sake of the oak timbers needed to build a fleet of war ships, the navy builders searched these coastal islands. Thus the frigate *Constitution* was built in part of oak cut on St. Simons Island, forty miles to the south of Blackbeard. But Blackbeard was itself remote; the timber available was not plenty nor of suitable size, so the trees cut there were few.

In the latter part of the last century, the South Atlantic Quarantine Station was located on the island, occupying an area there which was no more than a notch cut into its circumference; but this station was abandoned after the Spanish-American War, and the old buildings are for the most part decayed and overgrown with vines. Only one is kept up; in that the watchman of the island dwells, to keep his ward over the sanctuary which, after the quarantine station ended its usefulness, the island did become.

But even at the time of the station's activity, there was no attempt to penetrate the interior of the island. A bridle path ran along the marsh shore from the north end to the south; but there has never been an automobile on Blackbeard, and, except for one or two rude carts, no wheel has ever tracked the sand. Silence rests upon the spot like a blanket; the sun dwells there; the forest lies green and dark, mysterious as a curtain behind whose screen any strange miracle may pass. And along the eastern beach beats the slow, ceaseless rhythm of the sea, which built the island and is building still.

No man can set foot on the shore without being conscious of the ancient mystery of the place; without feeling in himself an atavistic stirring and a whispering fear. It is to preserve and protect such unique spots as this that the bird sanctuary program of the national government was designed; and the choice of Blackbeard as such a sanctuary was peculiarly suitable. It is remote and inaccessible. It lies off the coast halfway between the population centers of Brunswick and Savannah, some fifty miles from either; and both these cities have nearer at hand their own convenient access to the beaches and the sea. Blackbeard is ten miles from the mainland and farther than that from the nearest town of even moderate size. So its visitors are few; and for weeks on end no stranger's foot is set upon its shore. The birds and the beasts that dwell there go undisturbed upon their natural ways, secure and free.

They should thus remain.



THE LARGEST AND MOST COMPLETE ESTABLISHMENT IN THE WORLD FOR RESEARCH ON WOOD IS UNDER CONSTRUCTION AT MADISON, WISCONSIN. IN THE NEW BUILDING, EQUIPPED WITH MODERN SCIENTIFIC AND TECHNICAL FACILITIES, THE FOREST PRODUCTS LABORATORY OF THE UNITED STATES FOREST SERVICE WILL CONTINUE THE WORK, INITIATED TWENTY-ONE YEARS AGO, TO IMPROVE THE PRODUCTION AND BROADEN THE USES OF ALL CLASSES OF FOREST MATERIALS.

"THE FOREST THAT FIRE MADE"

By S. W. GREENE

In this article, the author raises questions that will be warmly controverted. His conclusions that the longleaf forests of the South are the result of long years of grass fires and that continued fires are essential to the perpetuation of the species as a type will come as a startling and revolutionary theory to readers schooled to the belief that fire in any form is the arch enemy of forests and forestry. Professional foresters accustomed to distinguish sharply between indiscriminate woods burning and carefully controlled, intelligently directed and limited use of fire for specific silvicultural ends will be less startled, though they may dissent in varying degree from the particular views expounded.

Mr. Greene, it should be pointed out, is not a forester. For the past fifteen years, he has represented the Bureau of Animal Industry at the Coastal Plains Experiment Station at McNeill, Mississippi, in the study of the effect of ground fires upon forage production in the South. For a number of years, his work has been in cooperation with the United States Forest Service. in its study of the influence of fire upon forest growth. His conclusions, therefore, while not official expressions of the government, have been arrived at through study and observation at first hand.

In publishing the article, *American Forests* does not vouch for the accuracy of Mr. Greene's conclusions. It does, however, believe them worthy of consideration. It is unalterably opposed to the unrestrained and irresponsible burning of the woods that now characterizes the South. Controlled burning intelligently applied and practiced where proven beneficial is an altogether different thing. Regulated burning under certain conditions and limitations may have an important place in the management of longleaf pine forests. The Forest Service has been studying fire and forestry in the South for the past ten years and in view of Mr. Greene's contentions, the facts so far as determined by it should be brought to light as quickly as possible.

In the meantime, the American people, so prone to be careless with fire in the woods, must distinguish between the meaning of controlled and uncontrolled forest fires. The difference is as great as that between the subdued fire in the hearth that warms the home and the devastating flames that reduce the home to ashes. Discussion of the subject must not lessen the public's regard for care with fire in the woods.—Editor.

THE use of fire has been adopted, nursed and cultured as the greatest tool of mankind in the industries and professions, but in the field of forestry it has been branded with a curse to be dreaded and feared at every turn.

The importance of fire to the mechanical industries is apparent. Fire is a force of nature and not the invention of man, who has learned only to control and use it. Without its use, man's greatest invention, the wheel, would have remained only a wooden wheel of little use as a cog in the kind of machinery the world has known for centuries.

Fire would appear to be of the least use to agriculture, but even in this field fire was the primitive tool that changed the wandering tribes from nomads, dependent on the shifts of the game supply, to home builders and permanent residents of cultivated land. Trees were the dominant plants of nature and throughout most of the world they occupied the fertile soils that had sufficient rainfall to produce cultivated crops. It was necessary to clear the trees away before the ground could be cultivated or before grazing grounds could be opened up to the sunlight and animals grazed on limited areas. Fire was the only effective tool that primitive man had for the clearing of forest land and it has remained throughout the ages as the prime force for land clearing, which must still go on to open up the most fertile soils for cultivation and grazing and push the forests back to less productive soils.

All fires in the woods are by no means forest fires that destroy useful timber, even though they are uncontrolled, and not all foresters are fanatics on the subject of fires. There are many foresters and landowners "aged in the wood," who can stand calmly by and study the effect of fires of different sorts without shouting "forest fire." Thoughtful men of the southern piney woods have stood calmly by and made such a study for generations without knowledge that the study of the relation between trees and their environment had such a scientific classification as ecology. Their conclusions were not set down as scientific treatises but were passed along under the more common name of woodcraft and the

Longleaf pine as it once extended from Virginia to east Texas, in a belt 1,200 miles long. This is "The Forest That Fire Made" in the opinion of the author.

According to the author, this picture shows three months growth of longleaf seedlings the first year out of the grass on a railroad right of way which has been burned and cut back annually for the past forty-nine years.

lore of the woods told them when, why and how to use fire. As early as 1855 a trained ecologist (Hilgarde), working in the longleaf pine area of southern Mississippi, discovered that ground fires in the forest were understood by the natives and were applied for a useful purpose which he mentioned in one short sentence. Secrets of nature were so commonplace to woodsmen that they were considered hardly worth mentioning and so the story of "The Forest That Fire Made" is just coming to general notice although "The Fire-Made Forest" itself was the most amazing physical characteristic of the South when traversed by De Soto and his men from 1539-42 and has remained as such for centuries.

Longleaf pine (*Pinus palustris*) stretched in unbroken, almost pure stands from Virginia into eastern Texas, a distance of more than 1,200 miles and De Soto and his men traveled the length and breadth of it, for here was a highway free of underbrush, where a deer could be seen through the timber as far as the eye could reach. An army of mounted men accompanied by 300 head of hogs needed an open country to prevent ambush by the Indians and to keep the band together. When swampy, brushy or rough country was encountered the narratives of De Soto's men made particular mention of the fact. Historians seem to have traced De Soto's travel route mainly by the descriptions of the country set down. He tried travel to the north of the longleaf belt and was turned back; then he spent a year trying to penetrate the hardwood brush west of the Mississippi, only to turn back to the east where the going had been found easier.

No forest of such extent in pure stands and of such commercial value has been found on the face of the earth. Here was a poser, indeed, for the ecologist to ferret out the force of nature responsible for so favoring a single species of tree or the peculiarities of the species itself which enabled it to dominate over so vast an area. It was readily apparent that the northern extent of longleaf might be limited by temperature but farther south, in a region of heavy rainfall and mild temperature, one would expect a forest growth of great variety with a jungle undergrowth of vines and shrubs. Why did we get such a pleasant place in which to live and travel instead of a jungle?

There was no lack of a variety of seed trees of other species to promote their spread, for in the stream bottoms occurred slash, loblolly and various other species of pines, in addition to numerous hardwoods; but none of these could gain a foothold away from the wet land. The prevalent idea that hill soils were particularly favorable to longleaf and the bottoms to other pines will not hold, for, since the removal of the virgin longleaf forest, slash and loblolly pines in numerous instances have spread rapidly and have grown much faster at early stages than longleaf, even to the extent of crowding it out under longleaf seed trees.

It was noticeable that other species crowded out longleaf only in the absence of annual grass fires and since the southern region has a long growing season and a heavy rainfall, there is always a heavy grass growth and a carpet of resinous pine needles that burn readily until the edge of the swamp is reached. There fire stops. Fire then, was a good clue and when approached (*Continued on page* 618)

Here the author presents a picture to show that slash pine and hardwoods are held to the swamps by winter fires, thus giving the fire resistant longleaf an opportunity to take possession of the drier sites.

Fires Sweep Western Forests

Millions of Acres Swept by Flames as Lives, Communities, and Homes Are Consumed

THE searing tongue of fire, up to August 31, had ravished millions of acres of forest land in America. For relentless destruction and tragedy the season is surpassed only by such red years as 1910 and 1929. At the time of going to press the United States Forest Service reports 520,000 acres have been burned over in the National Forests alone this year. For the entire year of 1930 only 205,000 acres were burned over. During August alone 270,000 acres were burned in the National Forests, while in eleven days ending August 31, 135,000 acres were burned, at an expenditure of $900,000.

Reports from state and privately owned lands burned over are incomplete, but the extent of the terrific loss may be judged by scattered reports from California where 1,000,000 acres of forest, brush lands and forage area, not including National Forest and areas not protected from fire, have been burned over. Twelve lives were lost in the State.

Reports up to September 8 indicate that most of the great fires particularly in the fire torn and weary Pacific Northwest, are under control, the grim fire-fighters having been aided by heavy fall rains. In the Rocky Mountain States the same condition exists at high elevations. In California and the Southwest, however, the situation is still critical.

With the most damaging drought in years prevailing, and in the grip of extreme heat and strong winds, northern Idaho, eastern Washington, and most of Montana have suffered more than any other region. So great was the peril in Montana and Idaho that several hundred National Guardsmen were called into duty. In Idaho, two towns were leveled by the flames, Quartzburg and Granite Creek, while a hundred ranches were reduced to ashes. A cluster of mining settlements in the Boise Basin were destroyed altogether or badly damaged.

At the height of the disaster late in August, hundreds of men, women and children fled from their homes, and the problem of caring for them became so acute that the Red Cross and Salvation Army took charge of the situation. As towns and communities were evacuated—principally Pioneerville, Grimes Pass, and the Golden Age Mine, all in Idaho—fear was held that many of the refugees had been caught in the smoke and flame and perished. Forest rangers and National Guardsmen headed rescue parties into the inferno, and while a definite check has not been made, it is felt that most of the refugees were saved, although many were seriously burned and injured.

Although the actual number of fire-fighters killed in action is not known, a score or more deaths have been reported by Forest Service officials. Nearly twenty lives were lost in fighting fires on state and privately owned lands. On all fire lines, more than 300 men were injured, many seriously.

In the Yaak River region of Idaho three deaths are reported by the government. Anton Obermayer, a fire guard,

(*Continuing on page* 616)

SUMMARY OF FOREST-FIRE STATISTICS, BY GROUPS OF STATES, FOR THE UNITED STATES, EXCLUSIVE OF ALASKA, CALENDAR YEAR 1930

Data for fires on unprotected areas are based upon partial information only, from incomplete reports

Group of states	Number of fires				Damage			
	Protected area	Unprotected area	Total	Per cent	Protected area	Unprotected area	Total	Per cent
United States (Continental exclusive of Alaska)	70,832	120,148	190,980	100.	$14,597,280	$51,371,070	$65,968,350	100.
Northeastern	7,455	4	7,459	3.9	1,418,020	520	1,418,540	2.2
Middle Atlantic	10,928	.....	10,928	5.7	5,636,440	.....	5,636,440	8.5
Southeastern	10,790	46,321	57,111	29.9	2,033,100	25,663,490	27,696,590	42.0
Gulf	17,075	68,176	85,251	44.6	2,064,960	22,967,850	25,032,810	37.9
Central	4,426	5,524	9,950	5.2	1,072,020	2,714,950	3,786,970	5.7
Lake	9,324	.....	9,324	4.9	1,258,330	.....	1,258,330	1.9
Rocky Mountain	3,821	93	3,914	2.1	83,780	19,170	102,950	.2
Pacific	7,013	30	7,063	3.7	1,030,630	5,090	1,035,720	1.6

Area, in Acres, Burned

Group of states	Forest land protected		Non-forest land protected			Unprotected area	Grand total	Per cent
	Mature or merchantable	Total	Total	Grand total	Per cent			
United States (Continental exclusive of Alaska)	1,322,160	4,787,830	1,021,490	5,809,320	100.	46,457,140	52,266,460	100.
Northeastern	85,440	201,970	95,940	297,910	5.1	520	298,430	.6
Middle Atlantic	296,540	626,750	86,030	712,780	12.3	.....	712,780	.....
Southeastern	341,960	993,310	89,720	1,083,030	18.7	26,233,220	27,316,250	52.3
Gulf	291,690	1,567,760	11,410	1,579,170	27.2	18,831,450	20,410,620	39.0
Central	194,330	506,380	500	506,880	8.7	1,377,570	1,884,450	3.6
Lake	59,540	555,120	541,070	1,096,190	18.9	.....	1,096,190	2.1
Rocky Mountain	6,790	27,860	9,260	37,120	.6	9,680	46,800	.1
Pacific	45,870	308,680	187,560	496,240	8.5	4,700	500,940	.9

TIMBERLINE TRAILS

By Robert I. Hewitt

The trail twined in and out of the timber, always climbing steadily. Coming suddenly to an open meadow, a huge black shape lunged to its feet—a moose.

IT WAS still dark. From my bunk I blinked my eyes and listened. But whatever it was that had awakened me, I could not make out. From behind the cabin came the soft tinkle of the bell around Stepper's neck; through the open window I could just see the form of my other pony asleep on his feet. Evidently there had been nothing to alarm them, so the disturbance must have come from within the cabin. Here I was alone in a deserted ranch cabin in the wilds of Wyoming's Wind River Mountains, two hundred miles from the nearest railroad point and twenty-five miles from the Kendall Ranger Station and, as far as I knew, my nearest human neighbor, at the mercy of—what?

I have always been a light sleeper and, when on these lonely pack trips in the wilderness, I always slept with one eye and ear open. Something had awakened me, of that I was sure. And that something was right there in the darkness in that very room!

The open door met my blinking eyes and I wished that I had shut it before going to bed. What if my visitor was one of the numerous grizzlies abounding in that region? I pictured myself battling a bear in cramped quarters and saw visions of myself as a well-messed-up corpse. I held my breath as long as I could, then let it escape slowly. There was no other sound. With meager courage I raised my voice in a quaveringly gruff challenge and squawked: "Who's there?"

The startling jangle of Stepper's bell was the only answer.

"Must have been a nightmare," I muttered as I settled back under my blankets. Then, just as I was dropping back to sleep, I again heard the sound.

Something was stealthily crawling across the punchion floor! I lay perfectly still and tried to locate its source. The creeping stopped for a moment; then it began again. And shades of Custer! It was nearer and coming towards me!

The suspense had to be broken before my teeth rattled loose. I reached under the blankets for my six-gun. Then, holding it in readiness, I dug a match out of my shirt pocket and scratched it on the edge of the bunk. The noise stopped at the scrape of the match and the sudden flare dazzled me. The match burned out before I could focus my blinded eyes.

No sooner had the light gone out when the sound resumed; but it was more audible now and a new note had crept in. What before had been a faint, scratchy padding was now a distinct thumping, dragging noise. Then, abruptly, that stopped. There was a sudden scamper across the floor, followed by a clatter of tin cans dropping from the corner shelf.

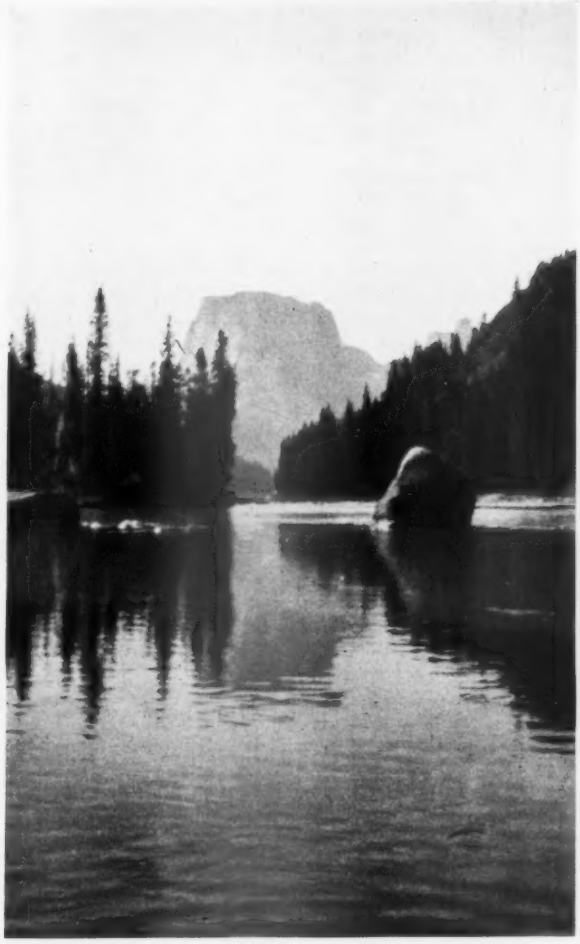
I muttered an oath and reached for another match. And as I sat there on the edge of my bunk blinking toward the far corner of the room, my tormentor sat up on his haunches, his whiskers working, his large ears pointing my way and his long, hairy tail flicking its clublike end in a nervous tattoo against the side of the water bucket.

I should have guessed who my visitor was by his doings—that boot being dragged across the floor, for instance. I cussed that pack rat for all he was worth. Then, knowing that there would be no peace in camp as long as he was around, I aimed and squeezed the trigger. His light and mine went out together. The match had burned down to my finger. My ears rang from the jar of the explosion and the small room was filled with the acrid smoke of black powder. So pulling the covers over my head, I resumed my interrupted snoring.

The sun was riding high when I next opened my eyes. I scrambled out of the bunk, pulled on my boots, stepped into my pants and was ready to face the day. First I touched a match to the kindling in the sheet-iron stove, then strode over to get the water bucket. It was what I saw then that broke the dam of my confined profanity. It wasn't the fact that the dead pack rat was sprawled and somewhat splattered against the water bucket, but that the bullet which had punctured the rat had plumb ruined the bucket. The slug had entered just above the bottom rim on one side and taken a sizable chunk, including the rim, where it came out on the other. I was just minus one recently good water can.

Scooping the rat into the bucket, I flung the two out of doors. Then, with coffee-pot in hand, I swished through the tall, dew-sodden grass to the gravelly bank of the river.

Although the sun was over the mountain tops, the valley



Although the sun was over the mountain tops, the valley seemed to be just waking. High above the lake loomed the monstrous bulk of Square Top Mountain, like the stern of some gigantic ship.

seemed to be just waking. A heavy mist hung over the grumbling river and the surrounding ranges were shrouded in vapor. The lake was invisible, but high above it loomed the monstrous bulk of Square Top, like the stern of some gigantic ship in a fog-bound harbor. I just had to stand still a moment in awesome reverence before wading back to the cabin and—breakfast.

Hot cakes enameled with sugar syrup and washed down with good "Java" filled my vacancy first rate. So after washing the dishes, I was in high spirit and ready to go.

Stepper nickered a greeting as I rounded the corner of the cabin. I mimicked him and held out a handful of oats. He followed close on my heels as I walked to where Jimmy was picketed. And not until he received another handful did Stepper leave me alone. I slipped the hackamore from Jimmy's head and replaced it with a bridle. Then, removing the bell from Stepper's neck and decorating him with the hackamore, I pulled the picket pin and staked him out in fresh grass. Jimmy and I pulled out together, heading upcountry.

Through the sagebrush and quaking aspens we picked our way, taking things easy and enjoying the warm sunshine. For a mile and a half we skirted the left shore of the lake; now catching but a glimpse of it through the trees, then coming boldly into sight so that we could feast our eyes on the emerald sheen of its quiet waters.

Birds chirped and sang all about us. A golden eagle floated high in the still air. All the world seemed glad and this happiness was contagious. I threw back my head and opened my mouth in song, but at the first sound, Jimmy snorted his disgust. I quit cold.

Soon we entered a grove of lodgepole pine and came to a fork in the trail. The left one led still farther up the river, past the Upper Lake, beyond Square Top Mountain and into the deep and gloomy recesses of Green River Canyon. We chose the right fork, since we were heading for Porcupine Basin. A short distance through these pines brought us to the shore of the river connecting the Upper and Lower Lakes. We plunged into the clear, icy waters of the ford. In midstream I brought Jimmy to a halt so that I might photograph the indescribable beauty of the scene to our left. The view was too good to miss.

We emerged from the stream onto a trail which led steeply upward, twining in and out of the heavy growth of timber. Now it ran parallel with the slope of the mountain, occasionally dipping into a rocky creek bottom, but, always, it climbed steadily.

About once to the mile I would find a windfall blocking the trail. Then I would unsling the ax which I packed on my saddle and exercise myself. For beside noting the general conditions of the grass, timber and game the purpose of this trip was to make passable all blocked trails.

When the sun was over our heads, I dismounted and loosened the cinch so that Jimmy could comfortably grab a lunch. Meanwhile, I just sat with my back against a tree and watched him get his fill. Always, in my travels, I tried to stop at noon to give my ponies a short rest, although I never packed a midday lunch for myself. Two hours later we entered the large, timber-bordered park known as Porcu-

The colorful wonderland known as Porcupine Basin—a large, timber-bordered park framed in evergreens with high, snow-covered, rocky peaks above.

pine Basin. Framed with evergreens and surmounted by snow-encrusted, rocky peaks, it was a colorful wonderland. But time would not allow us to linger. It was moving and we were forced to do the same.

We followed a dim trail across the open and into a thicket of aspens. We hadn't gone very far before a huge, black shape lunged to its feet almost under us. Jimmy snorted, reared and whirled like a flash, almost smashing my right leg as he crashed into a tree. I checked his mad rush and yanked him around. My right hand clutched a pointing six-shooter. "It's a bear, sure," I thought. Imagine my surprise when I discovered that the animal was a moose, a young bull about two years old. His homely head was graced by only one antler which was still in velvet and which trembled slightly when he moved. He had evidently rubbed off the other one.

I shoved my gun back into its holster and with uncertain fingers fumbled at the fastenings of my camera, fearful all the while that my subject would take fright and leave for the "tall and uncut." However, he remained, probably regarding me as much a curiosity as I did him. One snap I took and rolled the film for another. But when I looked into the finder the animal was not in view. With his curiosity satisfied he had strolled away. Onward we pressed, Jimmy and I, following a trail which twisted and squirmed across the crazily meandering, boulder-choked creek and back again.

In the wilderness time means very little, if anything at all. A man is free from the slavery of man-made markers of time. There are no whistles, bells, or clocks; the sun is his only timepiece and he makes use of it only three times during the day. And so it happened that I did not realize the lateness of the hour until the sun dipped behind a snow-frosted peak and threw a warning shadow-finger across our trail. I had no desire to spend the night in such forbidding surroundings. I reined Jimmy about and gave him his head. Tired as he was, he needed no urging. He shook his head and snorted to let me know he was glad to be heading back towards camp.

The miles slid fast under Jimmy's clicking hoofs. We were soon out of Porcupine Basin and on the sloping, switchback trail down the timbered mountainside. About eight miles, I reckoned, lay between us and camp. A long day in the saddle riding timberline trails puts a keen edge on a man's appetite. And since mine has never been dull, my thoughts were on the evening meal. I was hungry. What couldn't I do to a plateful of meat!

Jimmy wiggled his ears as I expressed this aloud and then immediately cocked them forward. Right in the trail, not fifty feet ahead, three fool hens boldly strutted. There was my supper just waiting for me!

I piled off and looked around for a stick, for nobody would waste a shell on a fool hen. Then, armed with a pine limb, I stalked down the trail. At thirty feet, I let the stick fly and downed a bird with a grazing blow. I ran forward and wrung its neck before it could regain what little sense it normally had. The other birds didn't take flight at my onslaught, but left the trail to go wandering, foolishly, into a mess of down timber. I aimed to have those birds, so I took after them.

The sun had set some time before and the failing light was uncertain. I peered among the shadows of the fallen trees, my arm raised in readiness for a sudden throw. A beaked head came into view. I fired the stick but never got a chance to learn of my luck. Jimmy's terrified whistle was drowned by the most hair-raising scream I ever heard. For one heart-pounding second I stood stiff in my tracks.

I whirled just in time to see the long, tawny body of a cougar leap for Jimmy's neck. But Jimmy had crouched under the expected shock and caused the lion to miss. This all happened in the wink of an eyelash. I had drawn my gun and blazed away, and was rewarded by a snarling squall of pain. But Jimmy had bolted down the trail. I had no time to waste if I was to head him off.

The trail swung in a wide arc around the shoulder of the mountain. By cutting straight across, I had a chance of getting ahead of Jimmy and flagging him. Wildly, I scrambled up the timber-strewn slope, tripped over rocks, slipped, stumbled and plunged on. Up the steep hogback, through thickets of fir, I fought and tore my way. My flapping chaps, my awkward heels, my spurs and gun all hindered me, but in spite of them all I finally reached the top of the ridge. Here I paused, nervously swabbing the sweat from my face with my torn shirtsleeve and listening for Jimmy's panic-stricken hoofs. I heard them—drumming like muffled machine-gun fire, and above me. I was ahead.

Jimmy came tearing around the point above me. I lengthened my neck-breaking stride. It was an even break whether I or Jimmy would win. Then just when luck seemed to be with me, misfortune grabbed me by the heels. A snag caught my spurs and sent me sprawling headlong into the trail. I had lost the race. Jimmy had flashed past, his hoofs beating back a taunting tattoo.

When I regained my feet I was mad enough to have bitten that cougar and given it hydrophobia. I cussed that cat straight up and down, then back again. I said evil things about Jimmy and wound up by telling the world what a goldanged pilgrim I turned out to be. Seven or eight miles from camp, afoot and dressed for riding!

Have you ever tried to walk several miles down a steep mountain trail wearing high-heeled boots? If you have, you will sympathize with me. If you haven't—don't! It's just plain and fancy hell with the coals heaped high! My feet were already afire as I shuffled along talking to myself. Slipping, sliding and stumbling, I hobbled on. Each and every step was torture.

In the excitement of my race I had forgotten the mountain lion. Now my misery switched my thoughts to him, the cause of it all. I wondered how hard I had hit him. Had he crawled off into the timber after the attack or was he now on my trail? Perhaps he was ahead of me, crouching on a ledge or a tree limb overhanging the trail.

Down the steep trail I stumbled, my eyes shifting from side to side and occasionally above me. The sky was darkened by low-scudding clouds and the whole mountainside appeared to be holding its breath and waiting. For what?

There was a low rustling sound in the trail ahead. I stopped abruptly and, for the third time that day, unholstered my six-gun. It was that cougar without a doubt.

I stared into the night hoping for a glimpse of the baleful glare of the cougar's eyes. There came a stealthy rustling. The lion was crouching for his leap. My thumb pulled back the hammer.

Then the moon poked through the clouds and laughed at me. And for the second time that night I gave vent to my private vocabulary. For there was no cougar in sight; the thing which had raised all my goose pimples was nothing more savage than a lowly porcupine.

The way I burned up the rest of that trail was a caution, and it took the glacial waters of Green River to cool me off. I splashed through the ford and came out looking like a drowned rat.

Jimmy was waiting for me at the pole gate. He seemed to have forgotten that he was guilty of a rotten trick. In spite of all my miseries I, too, was ready to forget and—maybe—forgive.

I let Jimmy into the pasture and stripped the saddle from his back. Then, after taking care of Stepper, I headed straight for the cabin. Across the threshold I stumbled, without freeing my swollen feet, and fell into bed and—oblivion.

A FOREST THAT "JUST GROWED"

Aspen, a Weed Species in the Lake States, Demonstrates Survival Values and Begins Contributing to our Forest Wealth

By T. J. Mosley

A NOTE of optimism, sounded early this year from northern Michigan, Wisconsin and Minnesota tends to relieve to some extent the grievous story of deforestation, tax delinquency, and land disuse which has been the burden of other reports from that section in recent years.

The new information does not tamper with the realities, which are of necessity grim throughout thousands of square miles that have been divested of primary wealth by the ax and have proved unresponsive to the plow. Nevertheless the message brings a heartening outlook that is all too rare in the average development of our forest scene.

Briefly, the news is to the effect that on 21,000,000 acres of cut-over and burned-over lands spread over the northern half of the Lake States in a gigantic labyrinth a new forest is in existence; that this forest, poor though it may appear, regarded as a curse and a liability by many owners, is nevertheless performing some essential functions of a real forest now and is meeting demands that will grow as its values are recognized. This new forest is of aspen, for long considered a weed species.

Aspen in well-stocked stands, under fair growth conditions, is not without natural beauty.

Aspen has for years been taking over sections, townships and counties in the Lake States as the land has been cleared of white pine and other more desired species. Its 21,000,000 acres, equivalent in area to the whole State of Maine, amounts to one-fifth of the original and more than one-third of the present forest area of the Lake States.

Aspen is the lowly "popple" that the orthodox lumberman condemns as a pest and a weed tree. "Popple" is of two kinds—aspen proper (*Populus tremuloides*) and largetooth aspen (*P. grandidentata*). The first is the typical, prevalent species. The second, considerably less abundant, is similar to the other in essentials; by lumbermen the two are not differentiated. Both have the flattened leaf petiole which allows them to quiver and quake in a light breeze. Both are poplars, closely related to European aspen and to the numerous species of cottonwoods.

What kind of a new forest, then, does this extensive expanse of "popple" make?

It may be described, in a general way, as a forest in spite of itself. Most of it is young, much of it in the brake and thicket stage. Aspen is relatively short-lived; the individual trees never grow very large. In about half of its area it may never amount to a commercially profitable stand. Its wood is not of the strongest. It is definitely susceptible to decay, especially when injured—and it is easily injured. There are many objections that can be raised against aspen if one is so disposed. But it lives! Aspen has perhaps the highest survival characteristics of any tree type in the Lake States, under the conditions that man has imposed. It is, in this sense, the "fittest," and man must take account of it. On sites that are at all favorable it grows rapidly for its first fifty years. Clear cutting only enhances its interests and fire in the stand establishes its dominance. Its chief propagation requirements are a degree of abuse that would mean the destruction of most species.

All the figures that have been collected indicate that aspen

is growing up much faster than it is being cut. About 8,000,000 of the 21,000,000 acres of aspen have stands averaging larger than three inches in diameter. On more than 1,000,000 acres the average diameter is six inches or over. Of the remainder much that is now in the "brush" stage and generally considered worthless will in the course of nature reach tree size and value within twenty-five years. Joseph Kittredge, of the Lake States Forest Experiment Station, gives the following account of the emergence of aspen:

"In the old-growth forest, before cutting and slash fires aspen must have been an uncommon and inconspicuous constituent of the forest. It probably occurred as an occasional small suppressed tree, or group of trees, in the openings, particularly in the white pine and white spruce forests. As cuttings and fires removed the old growth and incidentally destroyed the few existing aspens, suckers came up from the roots in a radius of twenty-five or thirty feet around each of the stems that had been destroyed, and with twenty to thirty suckers to a stem. Every fire that burned over the area thus increased the density and the area of the aspen in the new crop. Almost all of the enormous area of aspen in the northern Lake States today has resulted from repetitions of this process.

Aspen and paper birch in the Superior National Forest—acting as a nurse crop to jack pine, white spruce and white pine.

"The tiny 'cotton'-tufted seeds of aspen are produced abundantly in most years on seed-producing trees. They are so light that it takes two or three million to make a pound; consequently they are carried long distances by the wind and germinate almost immediately if they fall on moist ground. Most of the seeds, however, never germinate, except in the occasional favorable season and place; or the frail seedlings die during their first year. Although an insignificant part of the present aspen stands have originated directly from seed, seeding has been important in enabling the aspen to gain a foothold in new places so that scattered trees were widely distributed from which the suckers developed and spread as the old forest was removed.

"The few seedlings which survive are likely to be destroyed by fire before they are twenty-five years old. The root systems are established, however, and a group of vigorous, rapid-growing suckers replaces each aspen that is killed. The new group occupies an area of about one-fifteenth of an acre. Ten years later, more or less, the trees of this group are killed by another fire and the succeeding crop of suckers covers more than one-fourth of an acre. After the fourth fire, the suckers from a single, original tree may completely and densely occupy an area of one acre. This process is significant because it could account for the presence of the aspen type on areas where aspen trees occurred at the rate of one per acre in the original forest and where four or more fires have burned subsequently. These two conditions have existed in the Lake States on very large areas, quite comparable with the area of the aspen type."

Forest business is being transacted by aspen in the Lake States today. Its growth is a boon to game and to wild life in general. The data collected by Aldo Leopold in preparing his game survey indicate a pronounced increase of deer population in the Lake States in recent years—a result which he attributes not only to better protection but also to an increased food supply as compared with pre-lumbering days. To this result aspen contributes by furnishing part of the browse and by favoring with its light shade the growth of berries and other deer foods.

To the beaver, now coming back gradually from near-extinction, the aspen tree or sapling is bread, butter, and building material. The ruffed grouse, prince of game birds, makes aspen buds a chief part of his winter diet. To birds, rabbits, and lesser forms of wild life the aspen thicket offers friendly cover and some means of subsistence on many thousands of acres once bare from burning.

Aspen is not only kind to animals; it is tolerant of other forms of plant life. As a nurse tree it lightly shelters with its leaves delicate seedlings of more esteemed species, as white pine and Norway pine, to which too much sun or too much shade is fatal.

According to Mr. Kittredge, the life cycle of the nurse is complete at the end of fifty to one hundred years, in which period, if fire is excluded from the stand, balsam, fir, pine, and spruce—or maple and basswood—may replace the aspen as the dominant type.

Much land in the northern Lake States is light and easily eroded. Aspen, with its quick growth, its leafage, its humus, and its extensive root system, may be considered an emergency provision of nature to check excessive runoff, to replenish the soil and to protect it from erosion when other forest cover is destroyed.

Aspen, in short, fulfills the main natural duties of a true forest. All its merits, however, will fail to assure it the recognition and favor of mankind unless with its physical substance it can gratify man's appetite for gain and goods. And it is just here that the new information from the Lake States is most explicit and favorable.

R. P. A. Johnson, of the Forest Products Laboratory at Madison, Wisconsin, has summarized the results of hundreds of laboratory tests of aspen. The wood has an exceedingly fine and uniform texture, he states, with pores invisible to the naked eye and with annual growth rings visible only on close inspection; as a rule both heartwood and sapwood are white, and the wood when finished has a silky luster.

Analysis of its various characteristics puts aspen in rather choice company as a utility wood. For instance, it is one

pound heavier per cubic foot than basswood and one pound lighter than yellow poplar, two woods greatly in demand in the manufacturing trades. In softness it ranks between northern white pine and basswood. Its properties, in general, group it with these species and with northern white cedar, eastern hemlock, jack pine, balsam fir and eastern spruce.

The tendency of aspen to swell and shrink is relatively slight. Its bending strength, while not high, compares well with that of a number of species widely used. Its toughness, for a wood of its weight, is noteworthy. It holds nails well. It is easy to glue into unions of excellent strength and permanency. It is easy to cut, saw and shape with hand tools.

"Aspen," writes Professor Henry Schmitz, head of the Division of Forestry, University of Minnesota, "has long been regarded as an inferior species. This attitude is due chiefly to the relatively small size of the mature tree and the prevalence of heart rot and decayed knots, rather than to serious deficiencies in the technical or mechanical properties of the wood. It is true that aspen wood lacks unusual strength and any marked natural resistance to decay, but for many uses lack of strength and decay resistance is not, and should not be, considered a limiting factor in its use.

"Small-sized trees with numerous defects yield only a limited amount of clear lumber. As long as logs of other tree species, larger in size than aspen, were available at a moderate price, little urge existed for utilizing aspen. With a decrease in the availability of basswood, yellow poplar, and several other woods, the possibilities of using aspen wood for certain purposes became apparent. . . .

Aspen at its worst—five years old and still in the thicket stage, when it is usually considered worthless.

"Aspen is utilized to a certain extent almost everywhere it grows, but it is cut in comparatively large amounts only in Minnesota and Wisconsin. Even in these states the exact cut is unknown, but it is estimated that during 1928 approximately 71,000,000 board feet and 100,000 cords of aspen were cut in Minnesota. No estimate of the total cut of aspen in Wisconsin during the same period is available but in 1926 at least 33,000 cords of aspen pulp wood, 35,000 cords of excelsior wood, and 4,800,000 board feet of aspen crating lumber were used in that State.

"In general, it appears that the consumption of aspen pulp wood will materially increase. It also appears that, owing to certain desirable characteristics, the consumption of aspen dimension and crating stock will greatly increase. Undoubtedly, too, the use of aspen fence posts and mine timbers will increase in the Lake States in the future. The future trend in the consumption of aspen lumber will depend, to some extent at least, on economic considerations.

"At the present time, the price of aspen lumber is comparatively low, but as the intrinsic merits of the wood become more fully understood and additional markets are found for it, higher prices will undoubtedly prevail. Aspen saw logs in 1929 sold for from $21 to $22 a thousand feet, board measure, depending on the size and quality. Prices at shipping points were these prices less the freight to the mill."

Vast possibilities in the increased utilization of aspen open up to the eye that takes in the visible facts in America and abroad.

Here it stands, a new forest in the Lake States, largely an accident, widely regarded as a disaster. In Sweden they plant a new aspen forest often enough to keep the world's match supply up to par. American aspen is also good for matches. In Europe, aspen is widely used for house framing, cabinet work, coarse carving, turnings, toys, window blinds, clogs, pack saddles, cigar boxes, veneer, bungs and stoppers, baskets, barrels, crates, excelsior and pulp. A like variety and a greater volume of aspen utilization will almost inevitably arise in America as the trees grow and their value as a resource is appreciated.

The future mass-utilization of Lake States aspen will probably occur in paper-pulp production. Already, in New England and the Northeast more than 400,000 cords of domestic and imported aspen are used annually in soda pulp that is the basis of our every-day book and magazine papers. Improvement of pulping processes, notably the sulphite process, and development of new processes are the order of the day in the industry. The possibility of developing from aspen some form of newsprint, as well as serviceable wrapping paper, insulating and wall boards, and other products, holds out the fascinating prospect of millions of cords of the Lake States "weed" going to the digester—and, what to idealists is even more fascinating, being replaced by the same plucky growth, which refuses to yield its ground to use or abuse, fire, frost, or ax. Considering the present use of aspen wood for lumber, bridge planking, boxes and crates, excelsior, fuel, mine props, clothes-pins, candy boxes and pails, and many other past, present, or possible uses for aspen, one can hardly resist the conclusion that a huge potential asset has literally forced its way into American forest economy, and must hopefully await fulfillment of the prediction that—"A company that can adapt its manufacturing processes for the utilization of aspen within the next few years has every prospect of being able to obtain an abundant supply of raw material for many years."

A Chip Off the Old Block

By William H. Hobson

"COUSIN BILLY, when we goin' huntin'?" Startled, I turned to find standing behind me a twelve-year-old, blue-eyed boy, looking up at me expectantly.

"Why-er-there's nothing to hunt now, is there, son?" I parried, racking my brain to place this handsome young relative.

"Squirrels cuttin' hickory nuts," he assured me enthusiastically. "Mr. Bob Jones killed six 'fo'e breakfast this mornin', all in one big scaly-bark tree!"

"That so?" I replied, not without interest, still playing the hose over my car, covered with the dust of a three-days' automobile trip home. Out of the corners of my eyes I soon recognized the resemblance of the boy to his father.

"Which one of Doctor John's boys are you, son?"

"J. T.," he replied, apparently somewhat offended that I didn't know which one of the family of eight he was. "How long you goin' to be here?"

"About a week," I told him, as I ran the sponge over the hood. "My leave's up then."

"G e e, that's tough!" h e frowned, shaking his blonde head. "Dove season don't open 'till the first. So, we sho' must shoot some squirrels w h i l e you're here. Dad an' I killed a lot of 'em last year, using Mr. Atkinson's little setter dog. Oh boy, he's a swell squirrel dog—"

"So your dad still hunts squirrels with a bird dog?" I interrupted, happily recalling the many squirrel hunts I used to take, over thirty years ago, riding behind this boy's father on horseback, following through the woods a big pointer dog that was as adept at treeing squirrels as he was at finding coveys of quail. "Did your father ever tell you his experiences, when I was just about your age, in giving me my first lessons with a gun?"

"Yes, suh, lots o' times," J. T. grinned at me with a mischievous twinkle in his laughing blue eyes. "He said you used to follow him around like a bird dog. Y'all musta just about spent all your time huntin' and fishin'."

"Wouldn't you've liked that?"

"I'll say," he grinned enviously.

All of which had taken me back to about the beginning of the present century when I—then a twelve-year-old embryo sportsman—began to hero-worship this boy's father, while he was home on vacation from college. I could even imagine myself begging, too: "John, when we goin' huntin'?"

And now, back at home on leave, I naturally found a sentimental joy in chatting with J. T., this youngest son of my boyhood hero-sportsman. Under the shade of a spreading sugar maple in the side yard we washed and wiped, unconscious of the oppressive heat of a late-morning August sun. And, after I had amused him with hunting tales of long ago, the conversation returned, at his instigation, to squirrel hunting. I would have to offer some plausible excuse or tell him frankly the truth—that squirrel hunting no longer appealed to me as it once did.

Finally, as we sat together on the running board, I explained to him: "Where I live in Washington, on the edge of Foundry Branch Park, the squirrels are so tame that they eat from our hands. Consequently, as I grow older—some day J. T., you'll feel the same way, maybe—I'm rather inclined to protect squirrels. In fact we teach the boy scouts in my neighborhood that if they truly appreciate trees, wildflowers, birds and wild animals they will never kill needlessly harmless creatures like squirrels."

Whata man I am! "J. T." poses, proud of his bag,—his first squirrel.

"But these ain't tame or harmless, where we go," cut in J. T., who was quick to defend himself. "Last year they almost ruined Mr. Atkinson's corn in the fields next to the woods. He begs us to come up and thin 'em out. Huh, I wouldn't shoot a pet squirrel either—like those in the Court House Square in Memphis."

My sentimental feints being ineffective, I then offered the alibi that I had with me neither a gun nor suitable hunting clothes, not expecting that, at that particular season, there would be any hunting.

"Shucks! Cousin Billy," he countered quickly, "we can borrow any kind of a gun you like, an' those clothes"—I had on a golfing outfit—"are all right. You see, we drive dad's Ford along the wagon roads through the woods, and, when the dog trees, we jump out and make it for the tree befo'e the squirrel can reach his den."

In his enthusiasm J. T. got up and stood before me, using his best pantomime to portray a gray bunch of fur jumping and weaving its way—from limb to limb and tree to tree—toward a knot-hole and security. "Its no cinch to hit one either. Lots of 'em get away. Even dad sometimes misses 'em."

It was self-evident that I was confronted with a very astute youngster—one that, as yet, was unwilling to accept my flimsy excuses. For a moment I was puzzled, and then I turned to something I thought would be final—that is, if he had inherited his father's love of dogs.

"You like dogs, J. T., don't you?"

"Yes, suh," he replied questioningly.

"How long since it rained around here?"

"Pretty near one hundred days, the papers say."

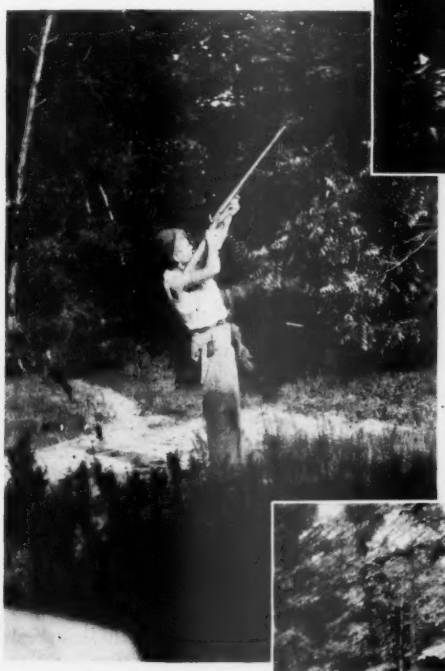
Now I had him cornered. "The ground's so dry that a dog couldn't possibly trail a squirrel. And without a drop of water in the streams, don't you think it would be rather cruel to hunt a setter—they feel the heat so keenly—in weather like this?"

All the animation died out of his happy face. He hesitated and sat down by me. "Yes, suh, I guess that's right," he admitted, disappointed. "I hadn't thought about the dog."

What a fine little sportsman! It was up to me to cheer him up a bit. "Of course, J. T., if we should get a good rain before I leave we'll drag your dad away from his patients and try the squirrels some afternoon."

There was a suggestion of a smile on his freckled face, as his eyes turned skyward. "Everybody's prayin' for rain; maybe it'll come yet, but those clouds don't look much like it."

"Sport" trees the first squirrel of the hunt.



I took a lucky snap of "J. T." just before he downed his third and last squirrel.

When we stopped at the cabin, with an awful thirst, and water never tasted so good!

We just had to take a rest along that wagon road. The crowd—left to right—shows Billy, sitting down; Dave, a country lad, standing; Sport, our setter, with Jack holding him. Doctor John (standing) and Fred.

"The world knoweth not the great things wrought by prayer." So said Tennyson, the great poet. Unless the 1930 model of twelve-year-old squirrel hunter is very different from the 1900 model, I'll wager that J. T., too, prayed for rain. Anyway, the great drought was broken that very night by a generous downpour that gurgled in the downspouts from midnight until dawn.

I hadn't finished dressing for breakfast when a colored maid knocked on my door and drawled: "Suh, Majah, dat littlest boy of Doctah John Crawford's waitin' on de front porch to see yuh."

Plans were agreed upon, and J. T. proved to be a perfect adjutant. All I had to do was to be ready by 1:00 P. M., at which time my brother Jack and Doctor John himself piled into the car with us, J. T. at the wheel.

With "Sport," a small lemon-and-white Llewellyn setter, and his young master Billy added to our passenger list, we set out from Mr. Atkinson's house in the car. At the crossroads, a quarter of a mile beyond the county poorhouse, Billy opened the car door and waved a hand toward a thick woods. Sport, a fine quail dog, too, cast off like the blue-blooded little bird dog he is and disappeared into the underbrush.

We sat in the car smoking. The hard rain the night before had made scenting conditions favorable for Sport, yet the sun shone down now from a cloudless sky. And, with the thermometer

around the century mark, I congratulated myself that I had worn a cool outfit and that we were to hunt a la Ford, rather than on foot.

"Yow! Yow! Yow-yow!" a very faint staccato bark registered on our pricked-up ears a few minutes later.

"Treed, thataway!" smiled Billy, pointing to a flank. "Y'all follow me!"

Through a quarter of a mile of thick woods, with the underbrush a mesh of windfalls, briars and second-growth bushes, we followed Billy—starting at a trot and ending at a slow walk—up hill and down dale, until we came upon Sport sitting, panting, at the base of a tall red oak. Cordon fashion, we surrounded the tree and began a careful scrutiny of any semblance of a grey ball of fur or a possible den. The foliage was dense. Five minutes passed. Still no indications of Mr. Sciurus.

"He's up dere," Billy assured us, after Sport had placed his front paws on the tree and barked sharply, confirming his decision. "Might be a knot-hole somewhere. Never kin tell."

We alternated, in vain, shaking bushes to make the squirrel move. J. T., who was standing by me holding my kodak, called over to his father: "Dad, try scraping a dead stick against that poplar by you."

The result was a rasping noise. "Look, look! Cousin Billy," J. T. whispered to me. "See that bump at the fork jest below the bunch of leaves at the top? I think that's him."

After looking in vain, I relieved him of the kodak and passed my gun over to him to shoot at the suspected target. I studied his movements as he raised the twenty-gauge, slowly took aim, and pressed the trigger.

"Bang!" rang out the little gun, followed by a dull thud against the ground. Sport emerged promptly from the cover, shaking, like a terrier killing a rat, a mouth full of grey fur. He trotted over presently and dropped the lifeless form at Billy's feet. Billy patted him affectionately, and J. T. stood speechless for a moment, looking down at his quarry.

"Right behind the ear, J. T., old fellow, you hit him," Doctor John pointed out, patting the young marksman proudly.

"I-I-I really didn't aim at his head, Dad. I jest aimed at the bump and squeezed the trigger—you know, like a lemon—the way you taught me to shoot. Oh, boy, isn't he a beauty?"

We old-timers exchanged understanding smiles of approval, born of the vicarious thrill that the sophisticated sportsman enjoys at the sight of the tyro when he bags his first game.

We were half way back to the car when, from the rear, we heard a dog treeing again. Puffing for wind, and with perspiration pouring from us, we came upon Sport and another dog—a yellow and white cur—sitting at the base of a tall shag-bark hickory.

Just then two country boys, lads in their late 'teens, emerged from the undergrowth. They proved to be friends of Doctor John's. And at his suggestion, after we had decided that the squirrel had escaped to an obvious den in an adjoining post-oak, the two hunting parties merged. Doctor John explained to me that the cur—a cross between a pointer dam and a collie sire—was also a splendid squirrel dog.

From that time on, it was a nip and tuck race between the two dogs, not only as to the number of squirrels treed, but also there seemed a method in their madness—to tree as far away from us as possible, and frequently in opposite directions at the same time. For a marathon runner, the game would have been a picnic. And, as a matter of fact, we had wonderful sport breaking up hickory-nut-cutting parties until, by mid-afternoon, the adult members, especially, of the cross-country squad were just about physically exhausted and crazed with thirst. Every spring that the boys led us to was dry as a result of the drought.

"Water," demanded Jack, sinking down on a log, "or I'll pass out on you." "Me, too," I added. Accordingly, we made for the nearest negro cabin. "Any drinking water?" Doctor John called out. A shiny-faced colored woman appeared in the doorway, several wide-eyed pickaninnies peeking from behind her skirts. "Yas, suh, Doctah Crawford," she smiled hospitably, "y'all set down dere in de shade ob de house while ah fetch yuh a bucket-full fresh frum de well."

According to our hostess' estimate, which was also confirmed by the two older boys, we were now about two miles from our car.

"Add to that about six we've already covered," groaned Jack, "and I'm ready to call it a day."

J. T. offered to go after the car, but Doctor John expressed our sentiments by saying, "When we old-timers get so we can't come in under our own power—which I hope is a long time off—then I'm ready to hang up the old musket for good."

Our party divided, the other boys stating that they would follow a short-cut to their homes. Typical of the generosity of the country sportsman of the South, they offered us their game which we gratefully refused, for already each of us had bagged three or four squirrels.

"We'll get mo'e of 'em along the road between here and the car," J. T. prophesied, jumping at my proposition: "You carry the gun, J. T., and you may use it, should Sport tree again." I then stuffed his trousers pockets with shells and smiled at him, strutting down the road, holding two shells in his hand, ready to load and go into action.

Sport soon treed about a hundred yards off the road, and I sat down by the roadside to rest and await developments, while the others followed J. T. "Bang! Bang-bang! Bang!" rang out a fusillade of shots amid a great deal of shouting. "There he goes! On your side, J. T.! That-a-boy, you got 'im! That makes four down!"

Upon my arrival on the scene, J. T., his face beaming, ran up to me, holding a squirrel by the tail. "This one, I-I plugged, Cousin Billy, beatin' it for that hole in this big black gum! Oh boy, a gang of 'em were havin' some picnic in that tall hickory."

"Look out over there, Billy!" Doctor John yelled. "Watch the top of that big white-oak while I shake a limb."

"You take the gun," J. T. offered.

"No, you keep it and stand here," I insisted, pulling him into an opening from which we could see the top of the tree. "Shoot, if you see one."

Presently he raised his gun, and, as his hawk-like blue eyes narrowed, my camera clicked, just before the little gun spat another deadly pattern of number sixes far up into the topmost branches.

With three squirrels dangling from his belt, another tried-and-true young sportsman posed for me, as proud as when you, possibly, killed your first game. And then we called it a day—a red letter one for J. T.

"A fine chip off a fine old block," I whispered to Doctor John, beside me on the back seat, as we bumped along the red-clay road leading to the Lee Highway.

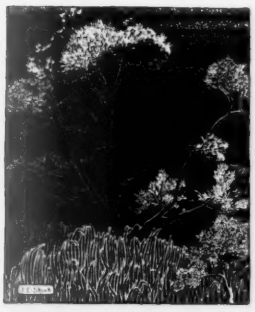
A modest smile stole over his kindly face. "I'm glad to note the boy's fondness for the outdoors and all that goes with it—especially hunting. Without it, we know he'd miss a lot in life, and as long as his interests are sublimated by a love of dogs, shooting, fishing and other similar healthful forms of recreation, I'll be spared any anxiety over how he'll turn out. Old Plato hit the nail on the head," Doctor John concluded, "when he said: 'Teach a boy to take pleasure in things that are fine and pure and strong and of good repute, and you have prepared him for a life wholesome and happy in itself and useful to the country'."

FOXFIRE

By

H. J. Dodd

The deceiving clitocybe (*Clitocybe illudens*) showing spore-bearing surface, which gives Jack o'Lantern effect in forests at night. The twisted form is caused by growing in clusters, a characteristic habit of this mushroom.



ONE often hears stories of tree limbs that glow after dark, of stones and fences, and even of leaves that take on an unearthly light after nightfall. These observations should not be doubted, neither should they be accepted as mysteries, although there may not be sufficient explanation of the cause that produces the effect in all cases of luminescence.

There are several types of luminescence or light emissions not directly attributable to the heat that cause incandescence.

Foxfire is the phosphorescent light emitted by decaying or "foxed" wood. Such a condition is caused by the attack of fungi, so that foxfire is not a self-luminescent quality of the wood itself, but an effect caused by the presence in the wood of luminous fungi. It is, therefore, incorrect to say that tree limbs and stones glow. They but furnish the background for the microscopic organisms that produce the light.

Phosphorescence is usually considered to apply to bodies which, after exposure to light, become luminous. It is never steady or intense, but undulating and cloudy. Photo-luminescence comprises two phenemona, from exposure to ultraviolet rays; fluorescence during exposure, phosphorescence when exposure ceases. Break a cube of sugar or rub two crystals of quartz together in the dark and observe another type of luminescence, known as triboluminescence. Then there are two other common types, cathode and thermoluminescence, the former occurring when certain bodies are subjected to cathode rays, the latter occurring when bodies not ordinarily luminous at normal temperatures become so when they are heated to a temperature just below a visible red heat.

The firefly exhibits a self-luminous type, which is known as autoluminescence. This type may also be produced from radioactive substances. Autoluminescence, while it may possibly be considered a secondary type exhibited by plants that are self-luminous, it is not the basic type affecting luminous plants. Doubtless the underlying cause for luminosity in plants is chemical or physiochemical. This type of luminescence is spoken of as chemoluminescence.

In some fungi the power of luminescence is confined to the active cells of the mycelium. This is true in the case of the honey agaric, which inhabits old stumps and often causes them to glow on dark nights.

Jack o'Lanterns, *clitocybe illudens*, sometimes spoken of as the deceiving clitocybe because their beauty cloaks a poisonous nature, are the most common examples of chemoluminescence. They occur in the eastern United States from middle summer to late fall about dying stumps of deciduous trees. Their caps are a brilliant cadmium orange, the gills are orange, and the stems are pinkish-orange. Forbes, in describing a forest in Sumatra, gives a beautiful contrast between phosphorescence and chemoluminescence. "The stem of every tree blinked with a pale, greenish-white light, which undulated also across the surface of the ground, like moonlight coming and going behind clouds . . . and here and there, thick, dumpy mushrooms displayed a clear, sharp dome of light, whose intensity never waned or changed till the break of day."

The Economic Status of Southern Pine

Excessive Taxation of Standing Timber, Together With Over-Production and General Business Depression, a Bar to Profitable Operations and Reforestation

By Henry E. Hardtner

Mr. Hardtner's article is the third of a series presenting the critical situation with which the lumber industry is today confronted. The first article of the series by Dr. Wilson Compton dealt with the lumber industry as a whole. The second article by William B. Greeley reviewed the crisis in the industry in the Northwest. In this article, Mr. Hardtner, one of the best known lumbermen in the country and the pioneer of commercial forestry in the South, sets forth the economic plight of the industry in the Southern Pine region. The next article will be by Mr. C. Arthur Bruce and will present the situation facing the hardwood industry as seen by that industry.

The information contained in these articles has been laid before President Hoover's Timber Conservation Board to aid it in its consideration of the problems and consequences of overproduction in the forest industries and in its efforts to find constructive remedies. The situation as presented by the industries spokesmen, however, is of such moment to public interests and to orderly conservation of our forest resources that the leaders mentioned in the preceding paragraph were asked to present their respective views in special articles for the information of the public.—Editor.

IT IS doubtful if the theoretical manufacturing capacity of the southern pine lumber industry could be determined with any degree of accuracy. If all its installed equipment were operated continuously twenty-four hours a day for six days a week, its annual output would be equal to or in excess of the entire lumber production of the United States. Normally this would be some 35 billion feet. Such a huge production would not at all be impossible, for the present supply of merchantable standing timber in the South, not considering regrowth, would be sufficient to insure such an output over a period of years. However, no such uneconomic program could possibly transcend the law of supply and demand, and this illustration is cited merely to stress the great size and importance of the timber stand which still remains in the South, rather than the industry's capacity to deplete it.

There are at least 7,000 sawmills in the southern pine timber belt, from Virginia to Texas. A production of 35,000,000,000 board feet would mean an annual output of 5,000,000 feet for each mill. So, it might be said for illustrative purposes, that the southern pine industry as it is constituted today has a maximum daily capacity of about 117,000,000 feet on a continuous operation, or 58,500,000 feet for a standard ten-hour day. Expressed in terms of annual output, the maximum normal capacity of the southern pine industry (300 standard ten-hour days) is approximately 17,500,000,000 feet. Present operating schedules yield a yearly out-turn for the region as a whole of about 8,500,000,000 feet, or a little less than one-half of the industry's normal capacity on the standard single-shift, ten-hour day basis.

Southern pine continues the most important single factor in the lumber production of the United States, furnishing about forty per cent of the softwood lumber and close to

A large modern mill in the South. Southern pine continues the most important single factor in the lumber production of the United States, says the author, furnishing about forty per cent of the softwood lumber and close to one-third of the entire lumber cut.

one-third of the entire lumber cut. It came into general demand in the consuming area north of the Ohio River about the year 1875 and reached its production peak in 1909, with 16,277,135,000 feet, or about one-half the entire softwood out-turn for that year. In the six-year period, 1912 to 1917, it averaged fourteen and a half billion feet annually, or forty-eight per cent of the total softwood cut in that period. In the six-year period, 1918 to 1923, it averaged slightly more than eleven and a half billion feet annually, or about forty-four per cent of the total softwood cut. In the six-year period, 1924 to 1929, it increased slightly to an average of 11.8 billion feet annually, or forty per cent of the entire softwood cut for that period. These figures are all Government estimates, and, due to the conditions under which they are gathered, understate by a substantial margin the gross cut of Southern pine.

Henry E. Hardtner

It would be difficult to state with any degree of accuracy the probable trend in production during the next five or ten years. Economic conditions will largely govern. If the demand is favorable, then we may expect only a gradual decline from the present normal production of approximately twelve billion feet to possibly ten billion feet in five years, and eight billion feet in ten. It is estimated that there comes into maturity each year, as a result of the quick regrowth in the South, at least seven billion feet of merchantable standing timber. It is unlikely, therefore, that the production will ever fall below this figure, and this certainly could not obtain for twenty years or more. Through increased interest in reforestation, it is entirely possible that a constant production annually of ten billion feet of southern pine lumber will be assured.

An outstanding consequence of the present depression, forcing the curtailment of lumber production as it has, will be the added life it will give to existing plants in the South. Mills expected to cut out during 1930 are still operating; the lives of others have been prolonged accordingly.

We estimate that there is now standing approximately 176 billion feet of southern yellow pine. Because of the rapidity of the natural regrowth in the southern pine region, there is little prospect of a real timber shortage in this species. Competent authorities have estimated that the production of southern pine will never decline below seven billion feet per annum, and as a matter of fact, that this is the present amount of the regrowth or coming into maturity; that there will be a gradual recovery or gain to somewhere in the neighborhood of nine billion feet.

Because of the overproduction which has existed in the southern pine region, sawmill operations in the South are anything but profitable. A gradual curtailment, of course, has been forced by the conditions which have prevailed during the past two years. The statistics of the Southern Pine Association for the first twenty-one weeks of 1931 show that the production of the reporting mills during this period was thirty-seven per cent below the average production of the same mills for the previous three years, and fifty per cent below normal production. During the first five months of 1931, production of southern pine has been fairly well balanced with demand.

The principal causes of overproduction are: general business depression; inactivity in building and construction; necessity for keeping mill labor employed; necessity for maintaining working capital; necessity for continued liquidation of timber to escape excessive taxes; inability of industry to act concertedly in production curtailment because of anti-trust law restrictions; stimulus of small mill production in agricultural sections caused by low prices of farm products and unemployment; excessive production on West Coast; competition from imports in domestic market and displacement of American woods in foreign markets, resulting largely from inability of American producers to compete with Russian lumber.

Had softwood lumber production been unaffected during the past ten to fifteen years by the premature cutting of timber on the West Coast, the aggravated condition of oversupply would not have materialized, at least to the extent that it has. This source of lumber supply was opened as an economic aftermath of the liberal disposal of public timberland, some 1,200 billion feet passing from the Public Domain into private hands within a few years at a cost of from three to fifteen cents a thousand feet. It is also true that the manufacture of lumber in the West has been mixed too largely with timber speculation. Many operators have gone beyond necessary purchases of raw material and engaged extensively in stumpage speculation because for a long time that offered the greatest opportunity for profit. This has had the tendency to make the business of manufacturing lumber subject to the exigencies of timber speculation; and to force cutting frequently not because there was a demand to be met, but because manufacture afforded the only means of cashing in on some speculative venture.

The conditions now prevailing in the lumber industry naturally interfere with efficient mill operation. Low-grade timber that would ordinarily be utilized is left in the woods, or burned after reaching the mill. The lack of ready money has to some extent interfered with the purchase of new equipment and machinery. The customary expenses and protective measures in the interest of reforestation have been foregone by many of the manufacturers who are sincerely interested in conservation.

The importation of foreign woods, on top of the uneconomic competition which the manufacturers of southern pine lumber are forced to meet, as a result of the too rapid expansion of production facilities in the West, constitutes a serious problem to the South, for thousands of communities are entirely dependent upon the continued operation of their sawmills.

The opportunities for further economies in the production

of southern pine lumber are decidedly limited, as far as the larger mills are concerned. These mills are usually efficient in their operation, for they have had the cumulative benefit of years of study, confined almost exclusively to the production and management end of the business. Without the discovery of new, revolutionary methods of manufacture, or the invention of more efficient mill machinery, it seems unlikely that further economies could be made. Among the smaller mills, there doubtless exist many opportunities for further economies in manufacturing costs. The use of poor equipment and inefficient labor in the outturn of their product is greatly responsible for keeping the costs higher than they should be.

In the distribution of southern pine, and, for that matter, of all lumber products, there is an urgent need for greater efficiency and the opportunities for economies are unlimited. No sound principles of marketing have ever been established in our industry. Some mills maintain their own sales organizations, with salaried salesmen exclusively. Others have salaried men in some territories, but depend upon commission salesmen in the markets not covered by their regular force. Worth-while economies could doubtless be effected through the marketing of the product through one or several sales organizations. These organizations could select their salesmen with greater care, educate them to render a real service to wood specifiers and users and effectively distribute lumber in all of the important markets.

The southern pine lumber manufacturing industry has retained immense areas of cut-over land, but whether these will be devoted to reforestation purposes only the future can tell. Private forestry must present some inducement as a business proposition, or it never will be undertaken. It is useless to expect men to look at it in any other light. Few of the manufacturers are actually acquiring cut-over lands for reforestation. As a matter of fact, their retention of those almost unlimited areas that now remain on their hands is not entirely voluntary. The vast majority of cut-over landowners would gladly dispose of their cut-over lands were there a present demand for them.

While private reforestation in the South is infinitesimally small when compared with the immense areas that are available for this purpose, the extreme adaptability of our soil and climate for timber-growing and the future timber needs of our country, more progress has undoubtedly been made along this line in the southern pine region than in any other section of the country. Notwithstanding, there are less than a half-dozen of the manufacturers who are undertaking reforestation.

In the South, as in all sections of the country, the essential things that must be done to assure a sufficient and permanent supply of timber to meet the requirements of future generations might be said to be: proper reforestation of a sufficient area of our present forested and cut-over land by Federal and state government and private landowners; effective and comprehensive prevention and suppression of forest fires; a more thorough utilization of forest products by the lumber manufacturers, wood-using industries and the consuming public generally; a modification or revision of the states' systems and methods of taxing forest property.

The principal obstacle to commercial reforestation is unquestionably the present system of annual taxation. There must be a radical change in the methods of taxation, or we shall not have another crop of trees, grown by individual owners, for future generations.

Only in an indirect way is the South affected by the disposal of publicly owned timber. While this is distinctly a problem of the West Coast, it nevertheless has bearing upon economic conditions of the southern pine lumber industry because of its effect upon the production of softwood lumber as a whole and the resulting excess of supply over demand. Any change that may be effected in the present policy of the Government with regard to the disposal of publicly owned timber will be beneficial to the lumber industry as a whole, including the southern pine branch.

Any study of the economics of the southern pine lumber manufacturing industry would be incomplete without the full consideration of the importance of the small mill operator as a production factor. This is so not only because approximately one-half of the total cut of southern pine has been produced by portable mills operating in second-growth timber during recent years, but because of the increasing extent to which lumbering in the South will be conducted by small units of production in the future.

Among the sources of supply for the smaller operator are the farm woodlots, and the growth on the large areas of cut-over lands previously logged by the larger manufacturers. For a time the timber remaining on these areas was inaccessible in many sections, with the removal of the logging road tracks. This inaccessibility has largely been overcome during recent years because of good roads and the auto truck. A few years ago it was unusual to go more than three or four miles back from the railroad to reach timber. Now it is a common practice to go as far back as twenty miles by auto truck. These two developments have been most important, bringing into existence the now prevalent concentration-plant type of operation, under which many small mills, through financial arrangement, are controlled.

The depressed agricultural conditions in many sections of the South have contributed in no small measure to the increased production by small mills. The farmers, at times, have been forced to sell their small tracts of timber to get money. Hundreds of small mills have been put in operation by the farmers themselves, in localities never before regarded as a source of lumber supply.

The small mills are fast abandoning the slipshod methods that usually prevail during an experimental period. Many of them have recently made rapid strides in perfecting their grading and manufacturing methods. Through the supervision that is now available to them by the Southern Pine Association and frequent district meetings, modern practices are being introduced into the operation of these mills. The ground work is being laid for quality production by the small operators of the future.

Foremost among the recommendations of the southern pine industry for the betterment of present conditions is that changes be effected in the form and method of state and local taxation of timber property. Taxing authorities always are governed only by present-day requirements, overlooking entirely the possibilities of assuring constant revenues from timberlands to their districts, and in the aggregate larger collections from this industry in the form of taxes to take care of public work. The lumbermen alone cannot effect this change, because of their apparent self-interest. Anything they say or do is bound to be misinterpreted. If the Timber Conservation Board's study of the economic conditions of the lumber industry should develop the truth, and indicate that the well-being of our country as a whole will be aided through the establishment of a more equitable system of taxation on forest property, greater weight would be attached to its recommendations because of its obvious desire to cure the ills of the lumber industry only through measures that will at the same time protect the public's interests.

It is also felt that the Board should interest itself in the strengthening of existing agencies for the collection of more accurate information regarding timber supply, operating conditions and market possi- (*Continuing on page* 639)

The Smartest Thing My Dog Ever Did

PART III

By JAMES HAY, JR.

Whenever the owners of dogs foregather, the conversation inevitably comes to the point where somebody slides forward to the edge of his chair and enthusiastically begins with the ancient boast, "The smartest thing my dog ever did—"

Having heard these remarks countless times, Mr. Hay, a dog lover himself, set out to collect from well-known men and women stories of the smartest things their dogs had done. He wanted to find out just how clever dogs are—not "trick" dogs that had been expertly trained to do circus stunts, but the general run of dogs.

These stories are being retold in *American Forests*. In August the author told of "Pointer," the smartest dog General William Mitchell, former chief of the U. S. Air Corps, ever knew—while in the September issue appeared the favorite dog story of Horace Albright, director of the National Park Service. Other articles will appear in November and December—astonishing accounts which tend to show how even more marvelously than the human mind a dog's instinct, brain or reason sometimes functions.—Editor.

CHARLES EDWARD STEWART, Administrative Assistant to the Attorney General of the United States, gave an incident which proved that dogs can reason.

"The heroine of this tale," he began, "was Lady Lou, an aristocrat among dogs, a registered pointer, daughter of the famous sire, Jingo's Light. She was a beautiful thing, white with liver spots. For her and her half-sister, Lady Bess, I was offered twelve hundred dollars back there in the days when a dollar was real money, but I never sold Lady Lou. She was the fastest thing I ever saw in the hunting field, and she had sense, brains.

"Lady Lou"

"But, to the incident that showed how smart she really was. A friend and I had been hunting quail with fairly good luck nearly all day, and Lady Lou had done noble work.

"We were in a corner of a big field when Lou 'pointed' some quail in a clump of broom sedge in the opposite corner. As we started across the field, I saw a cow ambling toward a gate only a few feet from where the quail were.

"'That cow,' I said, 'will get there ahead of us and flush those birds.'

"'Maybe,' my friend suggested, 'if we run, we can beat her to them.'

"But at that moment the idea that the cow would flush the quail had occurred also to Lou.

Holding her 'point' every moment, without turning her head once to look at the cow, Lou began to back off slowly from the birds and toward the cow. Backing faster and faster but always holding her point, she got to the cow.

"Then, for a few moments, she devoted all her attention to the animal. She didn't bark because she knew that would frighten the birds, but by silently nipping at the cow's forelegs, she turned her around and drove her off.

"She immediately resumed her point and, going back toward the quail, came to a standstill where she had first pointed them.

"There was a clear case of reasoning. Out of a corner of her eye Lou saw the cow as soon as we did. She saw also, as soon as we did, that the cow would flush the birds before we could get near enough for a shot. She decided, therefore, that it was her job to protect our sport by driving away the cow quietly and not startle the birds into flight.

"Milo."

AS MIGHT have been expected from a man accustomed to seeing the funny side of life, Strickland Gillilan, the humorist, related what was not only the cleverest but also the funniest thing his dog had ever done. "Milo," he said, "was a liver-and-white pointer pup with an insatiable fondness for playing with cats, sometimes in a way that was not altogether acceptable to the feline victims.

"On one occasion I walked into my backyard to find Milo playing with—perhaps the better word would be bullying—a kitten that was apparently too stupid to realize that in flight was her only salvation.

"At any rate Milo was throwing her down, picking her up, turning her over, and occasionally inflicting emphatic rebuke with his teeth. The kitten, emitting a terrified 'meow!' now and then, was evidently getting no pleasure from the engagement. But, as no real mayhem was being committed, I gratified my curiosity as to how long Milo would amuse himself in that particular way.

"He kept it up for an hour. How long he had been at it before I saw him, I don't know. At the end of the hour the pup was tired out, although his cat-teasing complex was still in the ascendant.

Strickland Gillilan.

"He warily let go of the kitten to see what she would do. Naturally she started to leave, and not to stand on any ceremony in her going. Observing this, Milo recaptured her, held her down with one paw, sank into meditation, looked around, and finally solved the problem of how to retain possession of his plaything while resting up sufficiently to enjoy further dalliance.

"He turned the kitten over on her side and, with all the deliberation of an old gentleman sinking into an easy chair, sat on her. So relieved was his expression that I was almost certain I heard him sigh! After thus reposing on her flank for ten minutes, he resumed his game; but by that time, thinking the kitten had had enough, I put an end to it."

JOHN BARTON PAYNE, Chairman of The American National Red Cross, goes back to his boyhood when he describes the smartest and frankest thing any dog of his ever did.

"Right after the Civil War," he related, "my family, like pretty much all the others in the neighborhood of Warrenton, Virginia, was far from rich in this world's goods. Luckily, however, poor as I was, I owned a dog—an old pointer named General. Among the few beasts of burden owned by my father—a physician, but since no one had money, we ran a farm to enable us to have meal, meat and vegetables to feed the family of ten—was a mule, advanced in years and therefore unbelievably amiable—for a mule.

"There was, too, a family gun, and whenever I got a few cents together and bought some powder and shot, Gen. and I went hunting. The moment I appeared with that gun Gen. went wild with delight. He loved hunting.

A quaint old picture of John Barton Payne taken at about the time "Gen." proved his fidelity to the gun.

"One morning my father told me to ride the mule to the mill and get a bag of corn ground and bring home the bag of meal. Boylike I took the gun with me, and we set out across the fields, Gen. bounding up and down in ecstatic glee.

"On the way I spied a big bluejay high up on a limb of an oak. Without stopping and without giving Gen. the slightest warning, I blazed away at the jay, my idea being to prove to myself that I was a fine shot from the saddle.

"The minute that gun went off, things began to happen—abruptly. It was like the wreck of matter and the crash of worlds. I went a long journey and halted suddenly.

"The gun had kicked; the mule had leaped; I had been projected through the air.

"When I regained my somewhat jumbled senses, I saw the mule, nonchalantly grazing on a hillside not far away. I looked in the opposite direction, behind me, and there was the gun ten yards away sticking barrel down in the soft earth. And Gen. was lying flat on his belly, his nose touching the barrel of the gun, his eyes crossed in the absorbed gaze he bent on the symbol of his pleasure.

"You see, when the catastrophe struck, Gen. didn't act the hypocrite and play the hero to his befuddled and unseated master. He loved that gun better than he did me because it took him hunting, and when both gun and I were flung away by the mule, Gen. set out to protect the gun.

"He, I have always contended, was a frank and sincere, as well as a smart dog."

FERTILIZING SHADE TREES

By Homer L. Jacobs

STRANGE it is that not only indifference but sometimes actual hostility is found to the feeding of shade trees. The home owner carefully prepares the best and richest of soil for the annual flower bed but assumes that the tree, which has to grow for a hundred years in one place, needs no aid in its long struggle for existence. Theoretical objections are often brought up by the professional or research horticulturist in other lines who has but little actual experience with the feeding of trees. And many and varied are these imaginary reasons why shade trees should be set apart from all the other plants so far as fertilizers are concerned.

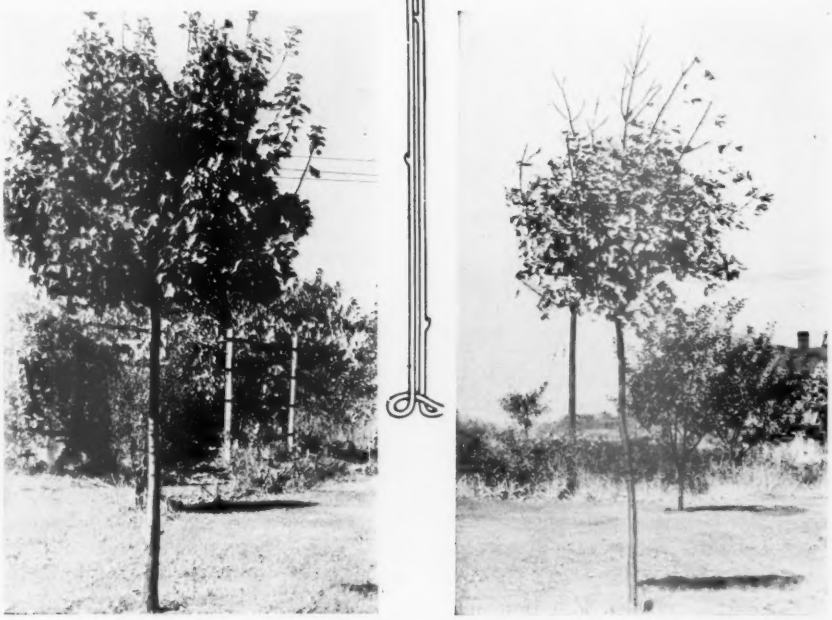
The value of the application of fertilizers, both chemical and organic, to farm crops is witnessed by the use made of them by successful farmers everywhere in the older agricultural regions in the East. Even in the newer regions of the West, which have been farmed less than fifty years, evidence is being secured to show the value of fertilizers on standard farm and garden crops. Growers of tree crops such as apples, peaches and pecan nuts generally find a favorable response to the application of chemical fertilizers.

It should be kept in mind that the response of farm crops to fertilizers is often secured on good, well-managed soils and on soils especially selected for the crops grown on them. Shade trees are plants not differing greatly in fundamental requirements from other farm, garden and orchard plants. The location of estates, homes and streets is not confined to good farm lands and as a result ornamental trees are required to grow on otherwise worthless, impoverished land and in locations where even the barest rudiments of good soil management cannot be practiced. Leaving aside theories and opinions resulting from limited observation and experience it can be definitely stated that the general value of fertilizers in shade-tree care has been amply demonstrated on many thousands of trees. This statement is based on many years of research, practical field experience and observations.

It is true the methods and materials used in agricultural operations are not always necessary nor desirable in the feeding of shade trees. This is due to the different environment in which the tree grows and to the fact that it is not required of the tree to produce a crop of edible seeds, roots, or tubers. The form and shape of one tree may enable it to fit into a certain architectural scheme better than its neighbor would. However, the average owner values a tree because it supplies a restful color and refreshing shade during the hot and trying days of summer. And just as the good lawn must form a perfect carpet of green so is the beautiful tree one which presents to the eye a mass of luxuriant green foliage.

While drainage and the physical condition of the soil, are of great fundamental importance in the health of a tree, chemical fertilizers play a very definite and important part in producing this healthy green foliage. As all horticulturists and soil students know three of the eleven or more chemical elements necessary for plant life are present in the soil in such small quantities that they often become the limiting factors in the growth of plants. These three are nitrogen, phosphorus and potassium. When used in fertilizer analyses these are stated as nitrogen, phosphoric acid and potash. So-called complete fertilizers contain these in varying proportions. In the language of fertilizer men a 5-10-5 means a fertilizer containing five per cent of nitrogen, ten per cent of phosphoric acid and five per cent of potash.

While the last word in fertilizer ratios has not been written for any crop, many fairly definite recommendations are made for certain crops. For example, a comparatively high potash fertilizer is recommended for potatoes. For wheat and many other farm and garden crops phosphoric acid should be present in much larger quantities than either nitrogen or potash. These recommendations are based on the response made by these crops in field experiments where varying ratios of the three elements were tried out. Thus it is clear that a complete fertilizer may be a "balanced ration" for one crop but not for another. When trees are considered it is found that they, too, respond to the application of one of these three elements more readily than they do to the others. In this case it is nitrogen. In fact, the application of phosphoric acid and potash to trees has been of benefit so seldom that their presence in complete fertilizers for shade trees should be in limited quantities only, and to take care of the unusual case when they may possibly be of value. This is true whether the re-



Graphic exemplification of the value of fertilization. The tree at the left is fed each year in the fall, while the tree at the right receives no feeding at all.

sults are based on color or other condition of the foliage, or the rapidity of trunk and twig growth.

This lack of response to phosphorus and potash may be due to a number of factors. Among these may be mentioned the chemical make-up of the tree tissues compared with the tissues of other crops; the fact that trees are able to absorb minerals over a longer period of time than annual crops, or the somewhat deeper rooting habit which may enable them to feed in the lower mineral-containing layers of soil which hold but little nitrogen and which are denied to the shorter-lived plants. It is known, however, that some of the native forest soils, which have produced and are producing excellent stands of timber, are low in available phosphorus when these soils are judged by their need for phosphorous for other crops. Many species of shade trees have been shown to respond readily to the application of nitrogen only while they were growing in soils containing negligible quantities of phosphorus from a general agricultural viewpoint.

From these facts it can be readily seen that many of the commonly used general fertilizers, applied in the quantities recommended for gardens and lawns, do not supply shade trees with enough nitrogen. If applied in larger quantities they may be actually wasteful because of the large amount of unnecessary phosphorous applied. The use of a 4-12-4 ratio, for example, while beneficial in proportion to its nitrogen content, is certainly not an economical fertilizer for shade trees. A well-balanced mixture for shade trees should contain at least two and preferably three times as much nitrogen as phosphoric acid or potash.

Not only should tree fertilizers contain large proportions of nitrogen but some attention should be given to the materials used to supply it. It is generally considered that plants can use nitrogen most efficiently in what is known chemically as the nitrate form. And yet nitrate nitrogen under certain soil and moisture conditions is readily lost to the tree. For this reason one cannot expect to supply trees entirely with nitrate nitrogen. Other and more slowly available forms must be used as well. These other forms of nitrogen are changed over to nitrate or available nitrogen by the action of bacteria. The activity of these bacteria in turn is influenced by several factors, one of the chief of which is temperature. In cold soils these bacteria are not at work and in extremely dry soils their beneficial action may be checked because the surface roots cannot absorb the nitrates. Thus, even with a fertilizer made up of both immediately available inorganic and the more slowly available organic materials, certain conditions may combine to check the supply of nitrogen from the soil to the tree. This fluctuation in the nitrogen supply can often be followed by watching the changes in color of the leaves of trees growing in soils of limited fertility during prolonged and extremely wet or extremely hot and dry spells in mid-summer.

It appears, however, that trees are able to take up and store nitrogen beyond their immediate needs. Experiments have shown that well-fertilized trees maintain their rich, dark green color evenly throughout periods of adversity when the foliage of similar trees with a limited food supply lose color and beauty. Fertilized trees reach their normal color earlier in the spring than unfertilized ones and stay green and hold their leaves longer in the fall. It is easy to have beautiful trees in June when nature's display is at its best, but the acid test is the condition of your trees in September after a blistering summer season such as we had in 1930.

The feeding of trees is not a general panacea for all insects, diseases, or other troubles to which trees are heirs. Neither will an occasional halfway attempt at feeding make a thing of beauty out of a long-neglected tree. However, when a complete and careful diagnosis of a declining tree discloses no parasite responsible for the condition, thorough annual feeding usually results in an improvement that is definite and in some cases remarkable. The photographs illustrating this tell the story. One shows a large old sugar maple after broken and dying branches were removed and the top shaped up in August, 1927. The foliage in the top was extremely thin, the leaves were badly scorched and the living tissues remaining in the leaves were pale green in color. At this time the tree was given a thorough fertilization using liberal quantities of both shredded manure and a high-nitrogen, complete fertilizer. The foliage improved in 1928 both in color and in lessened leaf scorch but was again fertilized thoroughly, using only the complete chemical fertilizer. The second picture shows this tree in August, 1929, at which time it was given its third consecutive annual application of

New lite through proper fertilization—in August, 1927, the declining condition of this sugar maple was first observed. It was treated and fertilized and the second picture made in August, 1929, when its improvement was notable. Following this, a third exposure was made in August, 1930, which needs no enlargement, for it tells its own story of improved growth and beauty.

chemical fertilizer. The foliage at the time the picture was taken had thickened up appreciably, the color was a dark green and the leaves were free from scorch. This was at the beginning of the period of scanty rainfall which continued throughout the fall and through the spring and summer following and was still in force at the time the third picture was made in August, 1930. Note the remarkable improvement in this tree which took place without the aid of artificial watering in the driest season on record in Ohio. All through the parching, rainless days of August and September this tree held up to the sky great masses of refreshing, unscorched foliage in a manner to gladden the heart of the tree lover.

This does not mean that trees do not need aid in the form of watering in times of drought. But feeding, as the records of this sugar maple and other trees show, is a very definite aid in helping trees to resist the effects of drought. The effect of an enriched soil on moisture relations of plants has been fully demonstrated by studies of soils and field crops. It has been shown that the addition of fertilizers enabled a poor soil to produce a pound of corn with thirty-six per cent less water than was transpired in a similar unfertilized poor soil in producing a pound of corn under the same weather conditions. A striking example of this decreased water requirement due to fertilizer has been reported recently from the New York Geneva Experiment Station. Lysimeter tanks were installed in such a way that an accurate record could be kept of all drainage water from a given depth of soil. Two series of tanks grew the same crops and received the same rainfall. One series received additional nitrogen in the form of fertilizers while the other did not. The tanks receiving nitrogen produced a larger crop of dry matter and yet actually delivered to the drainage pipes twelve per cent more unused water than the tanks which received no nitrogen. When these facts are considered it is clear why trees growing in a soil solution enriched by years of feeding may be able to grow steadily on in the face of drought.

Still another benefit in relation to drought resistance is the effect of feeding on root growth. Recent experiments by several soil workers seem to indicate that one of the chief benefits of cultivation is not the conservation of moisture due to the stirring of the soil itself. Instead it is believed that this conservation of moisture is due to the fact that cultivation kills weeds and so reduces the demands made on the soil. In most cases shade trees are growing in locations where the lawns must be preserved and so the benefit of cultivation resulting from reducing competition for moisture is denied the shade tree. On the other hand it may be that cultivation and the surface application of fertilizers are not only impractical but actually undesirable for many species of shade trees.

It has been shown that on many species any soil improvement by means of better air conditions, humus or mineral supply results in an increased growth of roots in the improved soil area. Where trees have to compete with grass roots for food and moisture and where the surface soil is exposed to severe and rapid changes in temperature, both winter and summer, it may not be desirable to encourage surface rooting by improving only the top few inches of soil. Apparently only one thing definitely limits the downward growth of roots. That is the presence of a permanent water table or completely water-saturated soil. This, of course, means a lack of air, which then becomes the chief limiting factor. Around most homes the subsoil has been cut into for the basement drain, storm sewers and other pipe lines so that free water is not usually found short of several feet in depth.

Hugh P. Barcley

Pachysandra offers one of the most beautiful of the permanent ground covers for planting beneath shade trees.

Thus vigorous root growth is not necessarily limited to the surface foot or two of soil if only more abundant air, nitrogen and humus can be introduced into this store of mineral and moisture-laden subsoil. With a somewhat larger portion of the active feeding roots growing in the lower improved soil levels the tree then becomes more independent of surface moisture and severe changes in temperature.

The perforation method developed by tree experts for the feeding of trees tends to bring about this enrichment of the soil well below the surface level and so has much to recommend it from both a practical and scientific viewpoint. Repeated observations have shown active, vigorous feeding roots growing into the materials placed in these holes at depths ranging from twelve to twenty-four inches or even deeper. Repeated feeding by this process from year to year making numerous holes each time and using both inorganic and organic materials cannot fail to have a beneficial effect on the spread, depth and vigor of the root system.

Many trees, however, have a decidedly shallow or surface root system even where conditions are such that deeper rooting would seem likely to take place. And such trees as the American beech and Norway spruce, for example, are especially sensitive to changes which affect the surface soil. This is shown by the rapid decline of native beeches when their environment is changed by bringing them under lawn conditions. In such cases the lower branches of the tree or the protecting underbrush and the surface litter are removed. As a result the surface roots are exposed to the action of the hot and drying sun in summer and the extremes of temperature in winter.

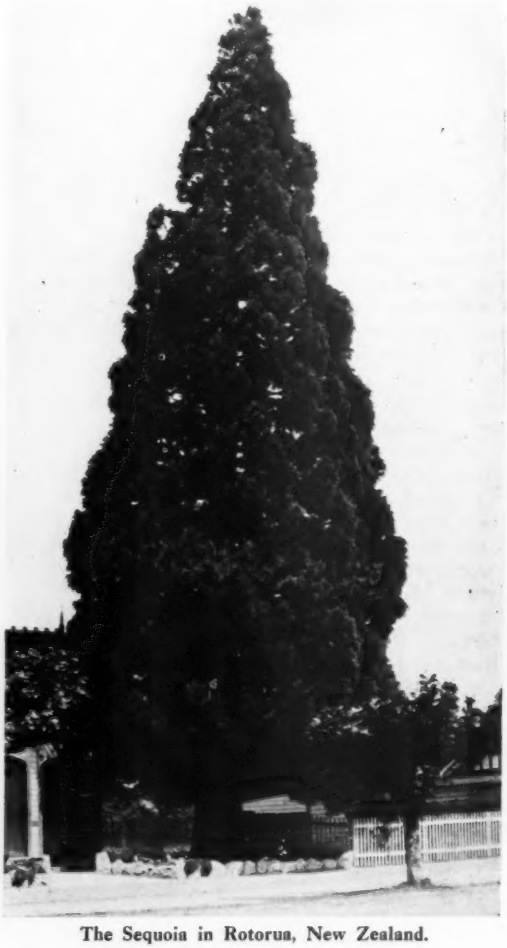
For such trees, in addition to the judicious use of chemical fertilizers and water, the use of ground-cover plantings may be considered. Many species of plants have the ability to endure dense shade. Some of these thrive in both shade or partial sunshine and yet grow in such a manner that they form a dense shade of their own to the surface of the soil. When they combine that with an open type of growth which allows ready access of air and moisture to the roots an ideal type of cover is formed for shallow-rooted trees. The use of

such plants as *Pachysandra terminalis* or *Vinca minor* allows one to add from time to time leaves, manure, peat or other humus-forming materials into which these shallow roots can grow. And yet the crowns of the plants form a permanent and protecting cover still a few inches above the shallowest roots. The addition of nitrogen is especially necessary in connection with mulches since the bacteria causing decay of the mulch material make heavy demands on the nitrogen supply. This may result in a scarcity of this element for the tree.

The proper chemical fertilizers can be applied safely and with benefit from early spring to late fall or even during the winter if the ground remains unfrozen. With some horticulturists there remains a fear that almost any cultural treatment applied in midsummer is very likely to cause a forcing of late growth which will be winter injured. This presumably is due to experience with tender shrubs, perennials or possibly some fruit tree such as the peach. The evidence, however, in the literature on fruit trees gives no definite ground on which to base a fear of using moderate amounts of chemical fertilizers in midsummer. Certainly with the majority of shade trees no evidence exists to show that midsummer applications are anything but beneficial.

Until recent years horticulturists quite generally believed that nitrogen applied late in the fall would not be taken up by the tree and would be leached out and lost during the winter months. Without discrediting the evidence that nitrate nitrogen does leach out readily there is evidence to show that trees can take up nutrients which they need even after leaf fall. From this and from numerous experiments it has been well demonstrated that late fall applications of nitrogen are as efficient and beneficial as when similar materials are applied in the spring.

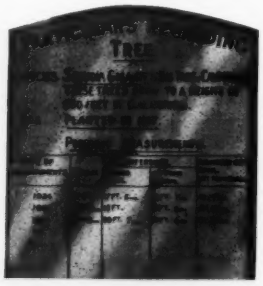
It seems well to touch on one other misconception still met with at times. That is the fear of using chemical fertilizers on conifers or other evergreen species. It is true especially with the shallow-rooted species that the use of mulches and ground covers is particularly applicable to the growing of conifers. These treatments, however, cannot supply the needed elements if the soil is poor. As a result both research and practical experience in most cases have shown only excellent results from the proper use of fertilizers on conifers.



The Sequoia in Rotorua, New Zealand.

A SUGGESTED MEMORIAL

"IT IS always a highlight in my travels to find Sequoias growing in foreign lands," writes Robert L. Pierrepont, a Life Member of the Association. "At Rotorua, in New Zealand, I was surprised to find a fine Sequoia. I tried unsuccessfully while I was there to get a photograph of it for AMERICAN FORESTS, but the location of the tree makes it difficult to photograph, as it can only be taken from the street and the light is wrong except in the early morning, which is often cloudy. However, I have at last received a good picture and believe it will be of general interest, as I have never before seen one of these trees in foreign lands showing the planting date and with the measurements given at subsequent dates. Unfortunately, the placard or marker on the tree does not state whether or not it was grown from seed.



A close-up of the placard on the tree.

"I have seen Sequoias growing well in France, Germany, Switzerland and Italy, and it seems to me that the most glorious and lasting memorial which could be made to our soldiers in France would be a large forest of Sequoia, protected by suitable agreements and regulations."

This is a splendid suggestion, and one which The American Forestry Association heartily endorses.

EDITORIALS

Fire—Master or Servant

THE article by S. W. Greene on "The Forest That Fire Made", appearing on page 583 of this issue, advocates the practice of annual burning in southern pine woods. Mr. Greene claims that in the case of the longleaf pine forest, annual fires are necessary both for the survival of the pine seedling and as a measure of protection for the mature forest against destruction by severe conflagrations during dry periods. He cites and apparently approves of the common practice of annual burning so universally indulged in by residents of the piney woods and even suggests that the habit may be beneficial as a means of fire protection for other species of pine as well as longleaf. These views are contrary to those long held and promulgated by most foresters and the United States Forest Service.

As is usual in profound differences of opinion, the truth must lie somewhere between the extreme views of partisans. For more than a decade, this subject has been under investigation by the Southern Experiment Station, United States Forest Service, and independently by H. H. Chapman of the Yale School of Forestry at Urania, Louisiana, on the lands of Mr. Henry Hardtner. The Forest Service has not announced its determination of facts although we understand it will soon do so. Mr. Chapman, however, says that his studies in part confirm Mr. Greene's views and in part differ decidedly from his conclusions.

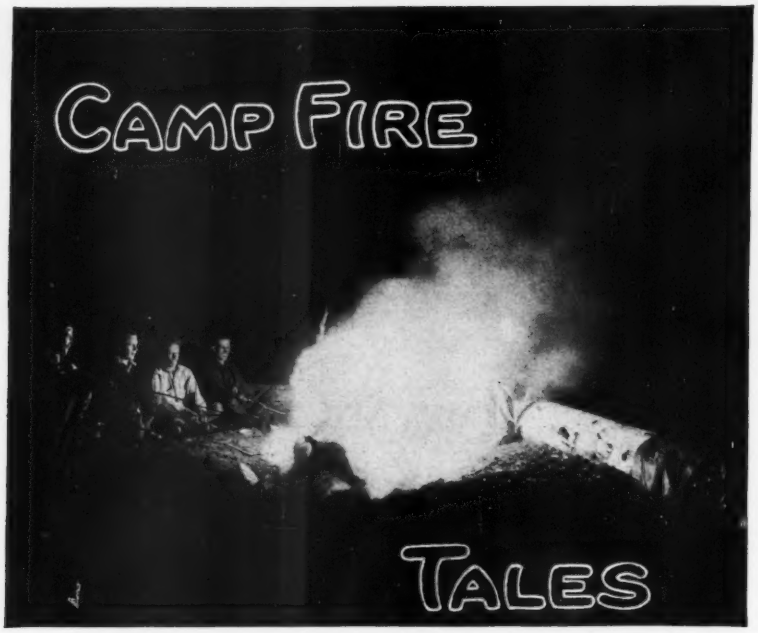
That longleaf pine is a most fire resistant tree is generally recognized by foresters. According to Mr. Chapman, this species of pine seedling depends upon the burning of the land for its survival in competition with other pines, hardwoods, brush, grass, and fungus diseases. For, he says, during the period when it concentrates on its root growth, with no growth in height, if fire does not burn the land, its competitors may cause its death by suppression, or grass and the brown spot disease together may retard and even kill the seedlings outright. Fires at the right time of year, Mr. Chapman asserts, do not kill the seedling longleaf pine but do kill its competitors and enemies. Thus survival of the vast areas of longleaf pine in pure forests, Mr. Chapman believes, was directly due to frequent grass fires.

But here Mr. Chapman would make important qualifications. Fires set at any other time of year than the winter, he holds, are apt to kill longleaf pine as well as other species, hence summer fires are often as destructive in this type as in any other forest. Fires during the first spring often kill all the longleaf seedlings. Annual fires stunt and set back the growth of the longleaf seedling and thin out the sapling stands. Fires in other southern forest types exterminate very young seedlings of other species and prevent the use of the land for growing the species which otherwise might thrive there. The cultivation of the rapidly growing and profitable slash pine for naval stores is thus prevented absolutely by annual burning, and the species is driven to the swamps.

The investigations at Urania, Louisiana, according to Mr. Chapman, have failed signally to show that annual burning is a benefit even to longleaf pine while they do indicate enormous losses to all other species resulting from this practice. With regard to longleaf pine only, and on land not suited to the production of faster growing and more profitable pines or of hardwoods, Mr. Chapman believes that controlled fires set during the late winter on damp days and not oftener than once every two or three years have beneficial effects in this forest type.

Foresters will not find novel Mr. Greene's idea that Indian fires have influenced the character of the original forests in some localities and regions of the United States. This is a question that has been discussed and studied for years. Mr. Chapman says it is difficult to imagine even in the longleaf pine belt a natural condition under which every acre of longleaf forest was burned over every year. During the very early settlements it was not the practice to burn the entire area each year. Nature's method was more often followed by burning a patch for early grazing. But the fire habit became fixed, and soon divorced itself from its original intent. Indeed, the servant became the master. Annual fires set by the local inhabitants regardless of land ownership and too often irrespective of season now sweep over the vast cut-over areas of the South. No distinction is made between longleaf, slash, or loblolly pines. Hardwood bottoms are recklessly allowed to burn, inflicting tremendous and lasting injury to timber values. Land owners desiring to encourage a second growth of loblolly, slash, or shortleaf pines wage an up-hill and too often unsuccessful fight against sheer incendiarism. The burning habit which holds the South in its pitiless grasp was formed with no regard for timber production and is cynically contemptuous of young pine seedlings.

For the past three years The American Forestry Association has waged a vigorous campaign against this southern habit of annual, uncontrolled, and unintelligent woods-burning. Whatever may be the facts in respect to the controlled use of fire in longleaf pine, there can, we believe, be no doubt in the mind of Mr. Greene or anyone familiar with southern conditions that the habit must be broken and the needless destruction wrought by annual wild fires to pine and hardwood reproduction stopped. Its place must be taken by intelligent, law-abiding control of fire and its use. There is no more important question confronting forest land management in the South, and the state and federal governments and other forestry fact-finding agencies should unite without further delay or controversy to bring out the facts as quickly and judicially as possible. Theirs is a public responsibility to remove the moot questions from the realm of bitter controversy to the field of clear facts.



TRUE STORIES OF THE OUTDOORS

STRANGER THAN FICTION, INDEED, ARE THE STORIES TOLD BY THE MEN WHO WORK OR PLAY BEYOND THE REACHES OF CIVILIZATION, WHEN THEY GATHER AROUND THE EVENING CAMP FIRE. THESE TALES, TRUE ADVENTURES ALL, AND TOLD BY MEN WHO ARE STILL PIONEERING, APPEAR FROM TIME TO TIME IN "AMERICAN FORESTS".

THE LOST HUNTER OF LAKE CHELAN

By Glenn E. Mitchell

SNOW came rather early in Washington in 1921, and there was good tracking on the higher elevations when the deer season opened in October. Chelan County had a good reputation for big game and many hunters had gathered for the opening. The little town of Chelan, at the foot of Chelan Lake, throbbed with excitement.

Leo and I were sent from the Okanogan office to cruise timber before winter set in, and we were bemoaning the fact that we could not join the hunters. Leo had brought a gun along but that only meant that he would get a deer if one was driven his way. We spent the first day at ranger headquarters going over maps and records preparatory to our trip. Everything was in readiness for our start early the next morning, even to the refueling of our launch *Ranger* which was to take us up the lake. I might mention here that Lake Chelan is fifty miles long and the only means of travel is by boat.

Lake Chelan is fifty miles long, one to three miles wide and 1,400 feet deep—the bottom 300 feet below sea level, and the wild mountain country rises 7,000 feet above the surface. The little town at the foot of the Lake was full of excitement at the opening of the hunting season.

We did not get away until late afternoon the next day, however, hoping to make Twenty-five Mile Creek by darkness. When pushed, our boat could make nine miles an hour. The fog settled down, hastening dusk, and we traveled near to shore to keep our course. We reached our destination in good time.

A light rain fell during the night but by

daylight the clouds had cleared away. We crossed the lake to the cove near Coyote Creek, where we set out afoot to an irrigation camp five miles away. This camp was about 3,000 feet above the lake. The first 2,000 feet of this climb was made up a track which had been used for hauling supplies by means of a donkey engine and car, and it was just like climbing a flight of stairs nearly a quarter of a mile high. We took our time, however, and reached the camp without difficulty. While we were preparing supper there was a knock on the cabin door, and Connors, a fellow we had known well at Chelan, entered. He was excited.

"Have you seen Jim Miller?" he asked at once.

We had not, so we urged him to sit down, and gave him a cup of steaming coffee. Finally he told his story.

He had left Chelan in company with Jim Miller to hunt the Falls Creek range. They had walked up from the lake and had made a temporary camp. The following day, though the fog was low, they hunted all forenoon on the south side of the basin without seeing anything. They separated then with the understanding that they would meet within an hour on the creek to their left.

In that time Connors returned to the creek and after waiting a while began to call. He built a big fire, thinking Miller could see it if he were anywhere in the basin, and kept it burning throughout the long night. Every hour he would shoot and call. Once he thought he heard an answering shot and renewed his signalling, but did not hear it again.

The fog was still hanging along the summit. Sometimes it would mount almost to the top of the ridge only to settle back with renewed density. Fortunately, no rain fell. Connors felt sure that Miller would show up at daylight, but when he failed to do so he set out for help, reaching our camp first.

We studied the map and tried to figure which way the lost man would go. Steiner, a government trapper, had worked this territory for several winters and knew every nook and cranny in it. So we decided to telephone for him. He started immediately but said he would not reach camp before morning as it would be necessary to drive to the end of the road and walk the intervening ten miles between road and camp. We also called a deputy sheriff who said he would organize a party and come by boat.

As our camp was south of Falls Creek, we decided it would be best to hunt out the immediate vicinity and determine, if possible, whether or not Miller had headed for Chelan. So we set out in couples, Leo and I taking the ridge toward the summit. We made a wide circle to pick easy walking and as we came upon the main ridge discovered the tracks of a man leading towards Falls Creek. They were not heading in the right direction but we argued that a man, lost, might go in any direction. We struck out briskly. But as we walked along, climbing all the while, the possibility that Miller was ahead of us seemed vague. They were fresh tracks but we found all kinds of excuses why our man would not be going in that direction.

Snow had been falling steadily for an hour and dusk was coming on, so we headed for a clump of green trees to make camp.

Just as we emerged from a dense thicket of lodge pole we saw a man ahead watching us. We asked him if he was Jim Miller. He informed us he was not and when told we were looking for a lost man, said he had hunted that ridge to the summit that day and had not seen a man track of any kind.

It was nearing dusk, so we headed down the draw for camp, the most direct route. The ground was frozen and the six or eight inches of light snow would not hold our footing. Leo fell on his hip a number of times and it became quite painful. I managed to keep my feet fairly well until we saw the light at camp. Then I stepped on a rock and fell down the hill. When I picked myself up I had a severely bruised back muscle.

When we arrived at camp the other boys were in. No one had seen Miller or any sign of his tracks. We decided to turn in early and make a big day of the morrow. At five o'clock we were aroused by the arrival of Steiner. He had walked the ten miles from the end of the road by lantern light and, of course, was tired. We induced him to rest while breakfast was being prepared and the lunches put up. Steiner's plan was to locate Miller's tracks and follow them. By so doing we would find him sooner or later, dead or alive. A special pack was prepared for the trackers—a thermos bottle of hot coffee, plain bread and butter and a small amount of aromatic spirits of ammonia.

It was still dark when we set out but by following the temporary road we could walk easily without a light. By the time we left the road it was daylight. Connors was to take us to the spot where he and Miller had separated.

The weather was still unsettled, clouds hanging low and fog in the canyons and basins. The ground slope was quite steep and it was three o'clock before we reached the place where the men had separated. Much to Connor's surprise we were on the north side of the creek and Miller's tracks led to the northwest just the opposite from which he had supposed. It seemed useless for more than two of us to follow the tracks, so Steiner (*Continuing on page* 620)

A City Man Tries Forestry

By Cary A. Rowland

CAN an employed city man with only snatches of spare time successfully undertake a forestry project? Or are the rewards of this fascinating pursuit reserved exclusively for professionally trained men and those with ample leisure and larger means?

District Forester Houpt, of the State Forest Service, stationed at Warren, Pennsylvania, believes that the average city man can succeed with a forest if he will secure and follow expert advice. I, too, believe it feasible and had motored to Warren from New York City to make a beginning on a long-planned forestry project. To one who is willing to make an honest effort, Mr. Houpt proved generous with counsel and practical aid.

In an hour four of us were tucked into my little car and were on our way to the woods. At the end of a little valley the car was parked and we trudged up a narrow-gauge railroad through dense woodland. At last we reached the "lot," an unfenced forest area as innocent of improvements as the Garden of Eden.

Three thousand seedling trees — two-year-old Japanese larches and white pine —had already been packed up the grade and heeled in, ready for planting.

The planting crew—rarin' to go! These Y. M. C. A. boys proved themselves real forest workers. The burlap sacks contained 3,000 two-year-old seedling evergreens.

"That larch," said the forester, holding up a thrifty specimen, "will make a good telephone pole in thirty years." "And the pine in about sixty-five years?" I asked.

"Longer than that," corrected the forester. "But this planting will make your property more valuable immediately, and also more beautiful should you place a summer cottage or a hunting lodge here."

An open space of perhaps an acre was selected and the planting started. The planting crew consisted of two young men, recently graduated from high school, each active and intelligent. After a few minutes' instruction, the boys acquired the knack, and soon they were planting trees at the rate of a hundred an hour. Forester Houpt considered this satisfactory. The trees were spaced five feet each way, alternate rows of larch and pine. Leaving the boys to attend to the planting, we started to inspect the property.

"How did you come to own a single lot way up here?" asked the forester.

"According to records a New York man purchased this tract of about 165 acres in 1839 for two dollars an acre. In 1862 he resold it to my grandfather for eight dollars an acre. The lot has been in our family ever since. The virgin hemlock was sold for $2,400 in 1884. These magnificent trees were cut and stripped of their bark for tanning purposes. The moss-grown trunks are still lying here. The second growth which you see has sprung up since."

In a small valley we found mostly small aspen, although young cherry was coming in thickly in spots. There were open spaces filled with bracken, as the foresters call the upland ferns. In earlier days fire raced up the valley every spring, burning everything before it. During recent years, however, the region has been protected by state fire wardens, permitting new growth to start.

On the hill fire had not been quite so deadly. Many of the older trees carried the marks of ancient fires but there remained an excellent stand of beech, birch and maple—characteristic of the Allegheny watershed.

"All the sawtimber on this tract has been sold to a local lumberman," I explained. "He is under contract to leave all young trees of less than eight inches in diameter, except where it is necessary to cut roads and skidways. The money received for the timber will be placed at interest. The income from this will pay the taxes and leave a small annual surplus which can be regarded as net income. So this property is already on a paying basis." "Yes," assented Mr. Houpt, "and the net income you mention can be materially increased by having the land classified as auxiliary state forest land as soon as the sawtimber has been removed. The assessment will then be reduced to one dollar an acre. A cutting tax of ten per cent must be paid when the next crop of timber is sold, but the sale of the timber will automatically provide the tax money."

Adjoining lots had recently been lumbered. After the sawtimber had been taken out the remaining growth had been cut for chemical wood. The cutover hills presented a sorry sight—a great wilderness of slash and huge windrows of brush. No seed trees had been left. New growth could start only from sprouts.

"What can anyone do with such a mess?" inquired Mr. Houpt disgustedly, as he examined the mutilated stub of a two-inch sapling which had been sacrificed to quick profits. "We foresters estimate that it will take more than a century to produce a satisfactory growth after such a slashing. If

trees under eight inches are left standing, as you have arranged for, a thrifty new forest can be established in one or two decades." Returning to my lot, we endeavto work out a comprehensive plan of development. The eighty or ninety acres carrying hardwoods presented no serious problem. If fire can be kept out, the young growth will quickly fill any spaces which may be left when the mature trees are removed. The open spaces on the hillsides and in the valley we planned to plant to mixed conifers. Fifty or more acres carrying only three or four-inch aspen presented a more difficult problem. Aspen is usually the first tree to spring up following fire. While it establishes a quick cover, it is of little commercial value. In some sections to be sure aspen is used for the making of butter tubs. Certain pulp mills are experimenting with aspen. Still a young stand is a very doubtful asset. It may be underplanted with a shade-tolerating evergreen, such as Norway spruce, but where this is done the aspen must be cut within ten years to liberate the spruce.

More than a thousand young pines struggling for existence the first summer after planting. They are hidden among the tall bracken. After the first few hard years, the pines will dominate all other growth.

The plan suggested by Forester Houpt was to slash and burn the aspen during the winter months when there is little danger of fire. Then, in the spring, plant the slashed area to sun-loving pines and larches. My objection to this plan was that it at least doubled the expense of establishing a plantation. All things considered, it seemed best to let the aspen grow in the hope that research may develop new uses for it.

A blistering July day found me again on the lot, alone. The bank where the trees had been planted was covered waist deep with coarse ferns. Parting the bracken I found the little pines alive and well-rooted. They had grown an inch or two despite the drought. The larches had not fared so well. I pulled up several and took them to the forester's office for examination. Mr. Houpt's letter lies before me now.

"There may be several causes for the larch dying," he reports. "The roots may have been dry when planted, late frost this spring may have frozen the trees, or the trees may have been planted too deep. The bracken on the area did not have anything to do with killing the trees, for we have similar plantations at other locations and the larch are doing very nicely."

To sum up the first year's work, I have 1,500 white pines which have survived the drought and will carry on.

Obviously there are drawbacks to amateur forestry just as there are to amateur gardening. These are the sporting hazards, which the enthusiast will surmount.

A second-growth forest of beech, maple and birch which has survived the many fires which raced through the woods before state and Federal fire patrols were established. The hemlock was cut in 1884, and the deciduous species permitted to develop freely.

President Reduces Season on Waterfowl

Emergency Hunting Regulations Brought About by Two Years of Drought

PRESIDENT HOOVER on August 25 by proclamation amended the Migratory Bird Treaty Act by reducing from three to one month the open season for hunting ducks, geese, brant and coots in the United States and Alaska. The President's action, he declares, is based upon an emergency brought about by the severe drought of the past two years in large areas of the United States and Canada—principally in the Northern Plains States and in the Prairie Provinces of Canada — which has spread destruction among the former hordes of waterfowl that migrate to this country. The areas chiefly affected by the drought are the principal wildfowl breeding grounds of the North American Continent. In the northern part of the country, not including Alaska, the season on ducks, geese, brant and coots under the emergency regulations will open October 1, and in the South on November 16, with the exception of Florida, where it will begin November 20.

Immediately following the President's action the Secretary of Agriculture revoked orders permitting hunting on eight Federal bird reservations in the West. These reservations are the only ones under the administration of the government on which hunting has been permitted.

Public reaction to the reduction of the shooting seasons is reflected in a mass of comment and correspondence which has poured into the White House and Department of Agriculture, it was announced. Protests have been received in great number from manufacturers and dealers of arms and ammunition and from groups of hunters, the latter, for the most part, suggesting a three-day-a-week shooting plan over a period of three months rather than the reduction to thirty consecutive days. A disposition to lend support to the President's plan, however, is indicated in the communications of thousands of sportsmen, who see in the emergency action a means of conserving their sport for the future, it was stated.

A number of protests filed with the government have been investigated by the Department of Agriculture and certain changes recommended. Sportsmen of Illinois, Missouri and Kansas protested that the open season of October 1 to October 31 did not give residents of these states hunting opportunities comparable with those in nearby states. Secretary Hyde, therefore, has recommended that the open season in these states be changed to a later period.

The drought that has necessitated curtailment of the season has occurred on the principal wildfowl breeding grounds in northwestern United States and in western and southwestern Canada, according to the Department of Agriculture. The disappearance of sloughs and marshes from much of this great region has prevented the birds from rearing normal numbers of young, and as a result the annual flight of ducks and geese this fall is expected to be the poorest on record.

These conditions, observed during investigations conducted throughout the breeding period by representatives of the governments of the United States and Canada over areas in southwestern Manitoba, southern Saskatchewan as far north as Saskatoon, and in Alberta westward to the Rocky Mountains, convinced Federal and Dominion conservation officials that irreparable damage would result if measures were not adopted at once to reduce the kill and to preserve an adequate stock of birds for breeding. Game conservation officials of both countries were unanimous in the opinion that the situation is so grave as to threaten disaster to the birds and permanent damage to hunting.

The one month season from October 1 to October 31 applies to Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York (except Long Island), Pennsylvania, West Virginia, Ohio, Indiana, Michigan, Wisconsin, Illinois, Missouri, Iowa, Minnesota, North Dakota, South Dakota, Nebraska, Kansas, Colorado, Wyoming, Montana, Idaho, Utah, Nevada, Oregon, and Washington. The season from November 16 to December 15 applies to that part of New York known as Long Island, and to New Jersey, Delaware, the District of Columbia, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Tennessee, Kentucky, Mississippi, Arkansas, Louisiana, Texas, Oklahoma, New Mexico, Arizona, and California. In Alaska the season will be from September 1 to September 30.

CONSERVATION OF OUR WATERFOWL

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A Proclamation

THE LONG-CONTINUED AND SEVERE DROUGHT OF THE PAST TWO YEARS HAS INFLICTED NOT ONLY ECONOMIC HARDSHIPS BY SERIOUSLY CURTAILING CROP AND STOCK PRODUCTION, BUT ALSO HAS RESULTED IN AN EMERGENCY CONDITION AS REGARDS THE PRESENT AND FUTURE SAFETY AND ABUNDANCE OF THE WATERFOWL OF THE CONTINENT. IN LARGE AREAS OF THE UNITED STATES AND CANADA, THROUGH LACK OF WATER ON BREEDING GROUNDS ESSENTIAL TO REARING THE YOUNG BIRDS, THE DROUGHT HAS ENTAILED WIDESPREAD DESTRUCTION AMONG THE FORMER HORDES OF THE WILDFOWL THAT MIGRATE TO OUR SEVERAL STATES.

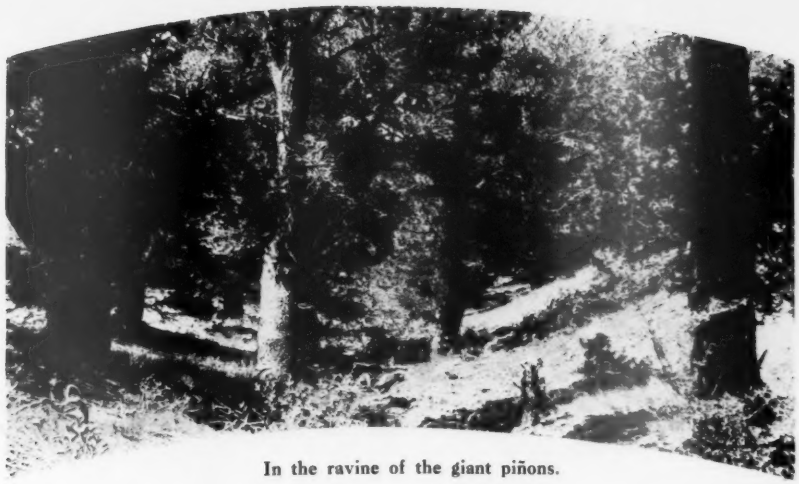
THIS DEVASTATION HAS CONSTITUTED SO GREAT A MENACE TO OUR WILD-LIFE RESOURCES AND TO THEIR FUTURE ENJOYMENT BY OUR PEOPLE AS TO IMPEL THE SECRETARY OF AGRICULTURE TO ADOPT A REGULATION COMPATIBLE WITH THE MIGRATORY BIRD TREATY ACT (40 STAT. 755), WHEREBY DURING THE COMING FALL THERE WILL BE AN OPEN HUNTING SEASON ON THESE BIRDS OF ONLY ONE MONTH.

NOW, THEREFORE, I, HERBERT HOOVER, PRESIDENT OF THE UNITED STATES OF AMERICA, DO HEREBY URGE THAT ALL PERSONS TAKE COGNIZANCE OF THIS EMERGENCY, AND I CALL UPON ALL GAME AND CONSERVATION OFFICIALS, STATE AND LOCAL, ALL MEMBERS OF GAME-PROTECTIVE ORGANIZATIONS, LANDOWNERS, SPORTSMEN, AND PUBLIC-SPIRITED CITIZENS GENERALLY TO LEND THEIR COOPERATION TO EFFECT FULL OBSERVANCE OF THIS REGULATION TO THE END THAT ADEQUATE NUMBERS OF WATERFOWL MAY RETURN TO THEIR BREEDING GROUNDS NEXT SPRING AND THAT THERE MAY BE NO REPETITION OF THE CALAMITY OF EXTERMINATION THAT HAS ALREADY OVERTAKEN SOME SPECIES OF OUR AMERICAN BIRDS.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND CAUSED THE SEAL OF THE UNITED STATES TO BE AFFIXED.

DONE at the City of Washington this 25th day of August, in the year of our Lord nineteen hundred and thirty-one, and of the Independence of the United States of America the one hundred and fifty-sixth.

HERBERT HOOVER.



In the ravine of the giant piñons.

Forest People

GIANT PIÑONS FIND A CHAMPION

COLORADO OLD-TIMER FIGHTS FOR PRESERVATION OF ANCIENT TREES

By Eugene A. Hancock

With Photographs by the Author

DROPPING down into a ravine on the easternmost slope of the Rocky Mountain foothills in northern Colorado, an outdoorsman of the old school, a farmer since the plow conquered the great plains, paused before the largest piñon pine tree he had ever seen. It was four feet in diameter and towered skyward like a great oak.

He speculated as to the age of the tree. He knew that piñons a hundred years old were still scrubs and that they rarely exceeded two feet in diameter. The tree before him was certainly hundreds of years old, possibly thousands—perhaps the greatest piñon pine in the world.

He looked about him and other piñons could be seen up and down the slopes of the ravine. Enthusiasm kindled instantly, for he still was a man of youthful enthusiasms and energies, and he began to explore. He found other great trees—a grove of them. And he discovered something that stirred his indignation. Woodchoppers had indiscriminately hacked off limbs from the forest chiefs; some were already ruined and others would suffer a like fate if the vandalism were not stopped. It was evident the piñon grove, which might claim distinction among wonder trees of the world, had been visited by men with unseeing eyes.

But the man who stood reverently among the rock-rooted pioneers now was to be their champion. He was a man whose imagination warmed to their antiquity, for he loved the olden days. His memory ran back to the time when as a child he was carried in the arms of Wild Bill Hickok, famous peace officer of the early West. He was a man who remembered the buffalo chase when vast unnumbered herds possessed the prairies. Son of an Indian fighter and scout, he cherished the memory of the time when the Pawnee Indians, whom he considered the greatest of all Indians, sought to buy him and make him a warrior or chief of their tribe.

The champion of the piñons—William A. Martin—standing beside a monarch tree in the grove.

The man was William A. Martin, a farmer of Larimer County, Colorado, and community correspondent for the county seat daily newspaper. And when he thought of the giant piñons he thought with a mind that had been ripened by the winters and summers of the open country and had been fed by the reading of many books.

"Billy" Martin's writings for the newspaper are read eagerly. He gives an epic touch to the small happenings among neighbors, and almost any day some friend may find himself arrayed in the armor of Sir Launcelot or Don Quixote, or playing in a modern rural setting the rôle of warrior, prophet or bard. And it is a great company of people gathered from literature or history with whom Billy's friends consort in his column. Besides, their doing are always lively, and sometimes narrated with more

inspiration than literalness. At one time Billy is the "Bard of Waverly" and in reminiscent mood sings of the buffalo hunt. At another time he turns detective and historian and relates the prowess of two prominent luncheon club members on a duck hunt when they wipe out the flock of tame mallards belonging to a farmer.

As might be surmised, when he began to champion the cause of the giant piñons what he wrote gained instant attention, especially when it was taken out of his column and displayed prominently on the front page.

"In this, Larimer County's piñon grove," he wrote, "are to be found trees nearly four feet in diameter. When one calls to mind the fact that government records give the diameter of the largest known piñons as something like thirty inches, one can realize something of the size and age of these hoary patriarchs. Three of these great trees, either of which will measure in the neighborhood of four feet in diameter, stand within a few hundred yards of each other.

"These trees, already twice the age of Methuselah when Christ preached His Sermon on the Mount, are probably next to the giant redwoods of California, the oldest living things in the world.

"Leslie M. Gooding, of the United States Forest Service, and I cut down a small piñon, something like two and one-half inches in diameter, and with a magnifying glass counted the life rings. Using the age of this tree as shown by the rings as a basis for his computations, Gooding figured the largest of the trees close to 4,000 years old. In other words, this monarch of the grove first set his feet in what is now the soil of Larimer County something like 1,000 years before the great Jewish ruler, King Solomon, builded his temple at Jerusalem."

Mr. Martin urged the creation of a state park to protect the trees. He obtained a quick response, although his objective was not fully reached. The Fort Collins Chamber of Commerce and Lions Club became interested. Professor W. J. Morrill, head of the Forestry Department at Colorado Agricultural College, and state forester, and William R. Kreutzer, supervisor of the Colorado National Forest, the boundary of which is not far from the piñon grove, examined the big trees. Due, probbably in large part, to changes in growing conditions, their borings did not bear out the estimates recorded by Mr. Martin as to the age of the trees. However, they found that the bigger trees were at least 700 years old, and Professor Morrill says that so far as he knows they are the oldest living things in Colorado at the present time, and the biggest piñon pine trees in the world.

An ancient piñon pine in the grove—the yardstick indicates its unusual size and right to be called a monarch of its tribe.

A veteran piñon of the Larimer County Grove—hacked to pieces by woodchoppers and gnawing porcupines.

Professor B. O. Longyear, of the Colorado Agricultural College, says that piñon pines are found in southwestern Wyoming, as well as in Colorado and Arizona, also in western Texas. They are common to the region, but the grove which includes the giant piñons is the only one in northern Colorado as far as is known. The grove is at about 6,000 feet altitude. Professor Longyear points out that this species grows at elevations from 4,000 to 9,000 feet.

The piñon grove is on a rocky slope facing eastward, which is grooved with a series of ravines running down toward the more level ranch country. The slope, sweeping upward toward the west, ends abruptly in a rim-rock cliff overlooking a beautiful valley through which runs the main highway between Fort Collins, Colorado, and Laramie, Wyoming. The northernmost ravine of the series on this slope contains the giants of the grove. Just how they came to take root there so far back in history that they were hoary 200-year-old trees at the time Columbus discovered America is a matter of speculation, but the birds or the Indians may have played a part in the establishment of the grove so far north and in such isolated surroundings. There are evidences of ancient Indian life in the vicinity, and the piñon nuts, eaten by Indians farther to the south, might easily have been brought north or have found their way north as the result of barter.

But, however they came there, they found the rocky soil to their liking, and, sheltered from the storms in their ravine, continued to grow through the centuries. One, at least, of the larger trees shows the scar of a direct hit by lightning, although the great trunk bore the shock remarkably well. Another spreading patriarch long has been a friend of the birds, being a favorite roosting place.

Mr. Martin's farm is near the home of the great piñons, and he continues to keep a champion's eye upon them, writing of them occasionally so that the public will not forget.

A Forest Page for Boys and Girls

Conducted by
WAKELIN McNEEL

BOYS AND GIRLS will be interested in what W. K. Williams, extension forester of the United States Department of Agriculture, writes in the following paragraphs, not only because of the pleasing presentation of interesting facts, but because it shows that Mr. Williams, a man holding a position of considerable responsibility, has a sincere enthusiasm for forestry work. We read between the lines his conviction that it has an important place in the program of every state extension forester. There is revealed a faith that boys and girls can and will do their part in forest upbuilding if men will lead. The remarkable growth of this work in the few years it has been systematically promoted is sufficient grounds for such a faith.

"There were 8,894 American boys and girls who took part last year in forestry work under the green four-leaf clover banner of the 4-H clubs of the United States," writes Mr. Williams. "It is an honor to be a member of this group that loves the great out-of-doors and the lure of the enchanting woods. The association with the many other groups of farm boys and girls studying other phases of agriculture and with the club leaders and the people from the colleges of agriculture are contacts which make club work full of inspiration.

The sign of the 4-H clubs—over 70,000 clubs of lively and sincere farm boys and girls are now learning improved practices under competent leadership.

"Last year there was a total of 822,714 4-H members in the United States. Just think of it—this vast army of boys and girls! Look at the number again—all of them steadfastly applying themselves to unfolding the truths of agriculture. They entered into their work with faith, courage and purpose, and these are the heralds of success.

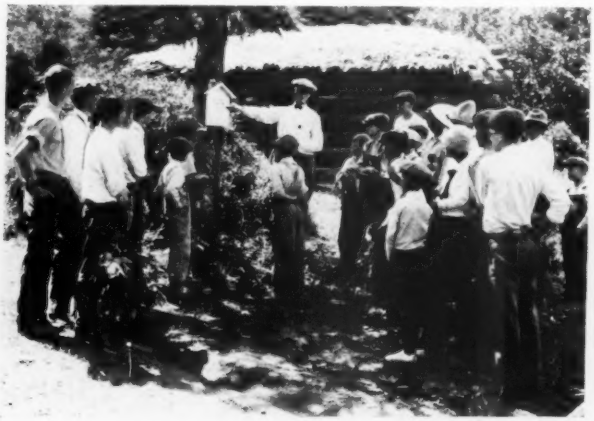
"Dr. Frank Crane has said 'The ideal school would be where there is a teacher wise enough to wander with the children in the woods and lead out their minds in self-expression.' This has been one of the principal aims in 4-H forestry work. Self-expression has asserted itself in numerous forms as in contests, collections of woods and leaves, forest planting and thinning operations, club meetings, tours, playlets, hikes, camps, money-making projects and in general social activities.

"As it will be more interesting to be specific in giving a picture of forestry club work I shall enumerate at random some of the 4-H club activities conducted in several states during the past year.

"In the State of New York they use the 4-H slogan 'Boys and Trees Grow Up Together.' Every boy and girl enrolling for the first year's work is given 1,000 trees to plant on the home farm. Recognition is given to outstanding work in planting and last year over $300, besides achievement medals, were awarded to club members. The second year's work is called forestry appreciation, the third woodlot improvement, and the fourth timber estimating and log scaling. Those completing the fourth year's work are awarded a certificate and it is particularly interesting to note that the first person to earn this certificate was a girl, Anne Wilcox, of Chenango County.

"Tours, camps and similar outings are always a cheerful part of forestry work and on these occasions ample opportunity is given to the young foresters to display their knowledge of woodcraft. There is always something new to learn and occasionally a 'new dish' is introduced as a part of the menu. On one of these camping trips, J. E. Davis, assistant extension forester, demonstrated how to prepare 'kaybobs.' Briefly 'kaybobs' are prepared by threading a long piece of bacon on a sharpened stick, then a slice of onion, a piece of beefsteak about two inches square, another onion, another piece of steak, a final piece of onion, then wrap the bacon around the steak and onions and fasten by piercing with the end of the stick. When the 'kabob' is cooked it is removed from the stick by wrapping a roll around it and drawing off. This hunter's dish was greatly appetizing to the boys and girls and there were many seconds and thirds awaiting their turns at the fires.

"In New Jersey the Junior 4-H club members study such subjects as trees, birds, animals, fish, reptiles and stones. The senior members conduct regular forestry projects. One senior club has the use of a small hut on an upper mountain slope and has access to a large tract of woods for conducting forestry operations. The club program approved by the boys consists in mapping a 320-acre tract of forest land surrounding the hut. The boys in the camp are very eager about the work and are taking a fine interest in the use of the compass, pacing, operating a plane table, estimating and mapping.



This leader is telling the boys: "Fire is the forests' greatest enemy. It costs our nation many thousand dollars each day. Our first duty as forest protectors is to learn how we can help in the defeat of this flaming enemy."

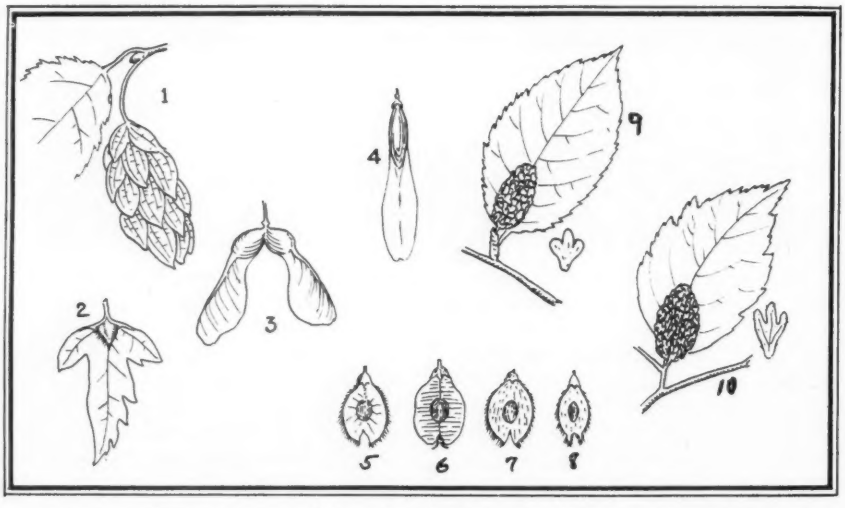
"One of the attractive features in the 4-H club work in New Hampshire has been the 4-H judging contest. The farm woods, plantings and improvement work are judged practically on the same basis as poultry and dairy animals. The three members making the highest scores in the county make up the county team and are sent to the College of Agriculture to compete for State championship during Farmers' Week. The boys and girls soon develop considerable interest and a degree of proficiency in forestry judging.

"From California we learn of many interesting happenings but will cite the work of only one club. All of the twenty-four boys and girls of the Santa Cruz Forestry Club completed their projects last year. The four members doing the first year's work identified fifteen of the principal trees of the county and prepared specimens of each. The remaining twenty members made seed beds and transplanted plots of redwood, Douglas fir, Port Orford cedar and Monterey pine trees. At the end of the year they had better than 11,000 trees which brought a net profit of $439. Arrangements are now going forward for making plantings at the entrance of the Big Basin State Park. This will give the club members experience in planting and when established the area will serve as a valuable demonstration. The club work in California, however, is not all work but a good mixture of play is included especially when on field trips and camping parties. On these occasions games and music have a prominent part. Here is one of their cheerful club songs:

These Michigan 4-H Rangers are learning to use the compass and plane table in plotting forest areas. And they take to it like ducks to water, says the Extension Forester.

"Hail we the green 4-H clover, emblem of youth the land over,
Head, Heart, Hand, Health, progress on the farm.
Club members learning by doing; Projects pursuing,
Faith in the country renewing. They'll be leaders never fear.
And they will bring forth the best from the land,
Through skill of head and hand,—they will united stand.
The farm and home in new beauty will flower through 4-H Clover's power.

"The summer camps in Michigan are always inspiring occasions. Last year one of the 4-H ranger camps was held at Ste. Marie. A program of recreation and study for the four days included the study of tree habits and tree nurseries, simple surveying, a trip to a paper mill and other interesting points, and recreation. (*Continuing on page* 639)



Here is another test of your ability to identify trees. The fruit or seeds of the trees may or may not be native to your part of the country. Test yourself first, then get out your tree book and confirm or correct your answers. Send correct list to "Forest Page for Boys and Girls," care AMERICAN FORESTS. Each of the first five sending in a correct list will be awarded a fine plaque "Plan to Plant Another Tree."

THE CROSS HAUL

By Evan Slyter

THE toughest foreman that ever handled a Wisconsin logging crew looked sourly at the pink-cheeked, smiling youngster before him.

"I'm Bullis," he said gruffly. "What do you want?"

The boy handed over a sealed envelope. "This is a letter of introduction from the company manager."

Bullis grunted and ripped open the letter. He read it with a deepening frown and began to curse. "Well, of all the dad-blasted nerve! So Slossen thinks I'm goin' to break in a green hand in the middle of February, does he! Well, the dirty pirate!"

The members of the crew, busy loading the large sleighs, grinned. The foreman's hatred of greenhorns was well known to them. Bullis strode up and down in the snow, marking each step with an oath. Finally he stopped and his heavy face relaxed.

"Well, Brach," (he looked down at the letter in his hand) "seein's how you're hired by the top-kicks, I s'pose I'll have to give you somethin' to do. If I put you into the woods you'd likely get killed by a splinter and make your mama feel bad. I'll make you errand boy. Go to town and tell Krebs, the mill blacksmith, to let you have the cross haul he's fixin' for me. You've just about got time to make it in before dark." The youngster was downcast. "Just as you say, boss. I'll learn something about this game from watching anyway."

"Sure, sure," said Bullis, almost kindly. "You'll learn a lot more than you're bargainin' for. But about that cross haul. Don't come back here till you get it. Understand?"

"Sure, Mr. Bullis, I understand. I'll wait until the blacksmith gives it to me. What if it isn't done tonight?"

"Go to the hotel and sleep, or park yourself in a snowdrift. It's all one to me, so long as you don't come back without that cross haul."

Brach started back down the road. Bullis turned to his crew and laughed heartily. "Well, boys, there's morn'n one way to skin a greenhorn. Won't that kid be surprised when he finds out what a cross haul is!"

Perhaps those unfamiliar with logging operations do not know what a cross haul is. In the earlier days, and even today where work is done on a small scale, sleighs were loaded by a team pulling logs onto the bunkers. Since the chains attached to the log stretched across the load, the team was cross hauling. Nowadays, where jammers are used, the name doesn't mean much, but it is retained. No matter whether a team or cars is used to load sleighs the pulling it does is called cross-hauling.

Brach went straight to town that night. The mill shop was closed, so he put up at the hotel. As it happened, he was the son of a wealthy friend of the mill owners and had been sent to the woods to gain experience. He had plenty of money wherewith to pay his expenses, but because he considered himself an employee of the company he arranged for his bill to be paid by Slossen, the manager of the mill. He mentioned also what he was in town for.

Instead of telling the youngster the truth, the hotelkeeper went to Krebs and repeated the joke. Krebs at once informed Slossen. The next morning, when Brach went to the blacksmith and asked for the cross haul, he was told that it had been sent out for special repairs and hadn't been returned. By the evening every resident of the village knew about the greenhorn that had come for the cross haul. And with the true lumberman's respect for a good joke every resident kept the truth from Brach. The second day in town the business men, mill hands, and floating lumberjacks were making it a point to be friendly to the greenest greenhorn that had ever struck that neck of the woods. Merkal, the keeper of the general store, made the town rock with laughter by describing a cross haul to Brach.

"Yes, sir, young man," he said in the hotel lobby that second evening, "I'm surprised that a careful fellow like Bullis would trust a new hand to bring a sensitive instrument like a cross haul back with him. Why, this one what's bein' fixed was broke by a careless sort of cuss who couldn't be trusted. He dropped a chain hold on the cross haul and busted it. Just plain carelessness, it was."

Slossen laughed—"The check is correct," he said.

"What does a cross haul look like?" asked Brach.

"What!" Merkal was properly astonished. "Ain't you never even seen one? Why, man, them things ain't so rare. I musta seen a dozen or more since they were invented about ten years ago. They look a lot like an alarm clock, only more sensitive."

The crowd in the lobby didn't crack a smile. Brach asked what the cross haul measured. You'll need to know now that a chain hold is a name for the hold that a chain has on a load of logs—a term similar to that of head-lock in wrestling.

"It measures a chain hold," answered Merkal. "It ain't easy to describe. Maybe you've seen a loggin' chain?"

"Oh, sure," said Brach, grinning.

"Well, that helps some. Now a chain hold is somethin' like a loggin' chain only it's bigger. The links is longer and heavier, and each one has got a sort of spring in it that tells whether or not your regular chain is strong enough to hold the load. It's like one of these spring weighers; and like every other kind of scale it's got to be tested every so often to see if it's workin' right. That's where the cross haul comes in, see. To test the chain hold. That's right, ain't it, Jim?"

Jim Krebs, the mill blacksmith, shifted his quid over to the other side of his mouth and nodded solemnly. "Yep, that's right, Merk. Derned if you didn't explain it better'n I

coulda done it myself. And me repairin' cross hauls for three years at that." Krebs put much admiration into his manner, not all of which was assumed.

Brach swallowed the false information hook, line, and pole. He asked numerous questions about the logging business and the men strung him along, telling him enough truth to keep the falsehoods properly stuffed. The woodsman, like the sailor, is fond of tall yarns.

The novelty of the thing lasted over a week. Brach went down to the mill every day to inquire about the cross haul. Both Krebs and Slossen put themselves out to invent explanations about the delay. After two weeks passed the village folk began to suspect that Brach was aware of their deceit and was playing a game with them. Since, however, true explanations would only serve to put them in bad positions, the villagers let matters drift.

Krebs mentioned his doubts to Slossen one day. The latter grinned. "Well, Bullis sent the boy to town to get the cross haul and told him not to come back without it. Seems like we'll have to let nature take its course. The joke's too good to spoil."

Slossen went his way with a peculiar smile that Krebs did not understand. From about the middle of February till late in March, six weeks altogether, young Brach waited at the hotel for the cross haul. Several times he went to Slossen with the request that he be sent out to camp. Once he was sent out, but the inexorable Bullis promptly returned him to town. No one seriously believed that Brach was deceived, but, aided by the inventive Merkal, everyone continued with the joke regardless of what might result from it.

Camps broke up about the first of April. While the equipment was being hauled in for storage and the men were getting their last pay, Slossen called in Brach.

"Well, my boy, I guess we'll have to send you home now. Logging's all over for the season."

"But how about the cross haul?" asked Brach.

"Honest, don't you know what a cross haul is?"

"Sure, Merkal explained it to me. It's a scale tester."

Slossen shook his head and went to the office window.

"See that team down there pulling logs up with the jammer?" Brach nodded.

"Well, that team is cross hauling." Slossen went on to explain the entire situation. Brach's face went red, then a sickly white.

"You mean that I've been making a fool of myself all this time?"

"Yes." Slossen felt sorry for the youngster. "But nobody needs know it if you do as I tell you. You just tell Krebs that you knew the joke from the beginning and that you were slipping one over on everybody."

"But he won't believe me."

"Yes, he will. Most of the boys are suspicious now. They figure somebody must have put you wise. They can't understand how a man could keep being fooled so long."

Brach went out with hanging head. He did what Slossen had advised and had the whole town feeling chagrin of the most acute sort. Though that doubtless cheered the lad somewhat, he left town in a hurry. He didn't pay his board bill at the hotel and he'd drawn forty dollars a month during his stay. He was lucky.

If it's true that he who laughs last laughs best, Bullis didn't have the best laugh. Slossen had that. The foreman came to town for his pay, thinking to receive a check for three months of work. His check was for less than that. He went to Slossen.

"Little mistake on my check, Slossen," he said breezily. "Say, that was a good one on young Brach, wasn't it? Never believed a boy could be so green."

Slossen laughed heartily as he looked at the check.

"Yes, Bullis, that was a good joke. By the way, this check is correct."

Bullis's smile faded. "Correct! I've got three months comin'."

"Less a little board bill of $66, Bullis. Brach stayed at the hotel six week at $11 per."

Bullis protested furiously, but to no avail. The joke had been his. He was obliged to pay for it. A few men gathered in the office and congratulated the irate foreman on his generosity. Bullis was so generally laughed at that he had to take a month's vacation to rest his spirit.

Slossen told his wife and—well, figure it out for yourself. As Bullis would doubtless agree, the whole affair was some cross haul!

FIRES SWEEP WESTERN FORESTS

(*Continued from page* 585)

was killed by a falling tree, while Nolan Warner, of Fillmore, Utah, and Howard Harvey, of Boise, civilian fire-fighters, lost their lives when trapped between fires.

In the Lewis and Clark National Forest, in Idaho, four more civilian fire-fighters were trapped by flames and killed. They were Charles Allen, of Pittsburgh, Pennsylvania, and Herbert Novotny, Harry Gunderson, Ted Bierchen and Frank Williams, all of Great Falls, Montana.

In the Coeur d'Alene National Forest, in Idaho, John Moss, a fire guard, was killed by a falling tree; R. A. Haden, of Stevensville, Idaho, a civilian fire-fighter, was burned to death on the Bitterroot National Forest. Another civilian, not identified, was killed when a fire truck containing twenty fire-fighters was wrecked. Two others were seriously injured.

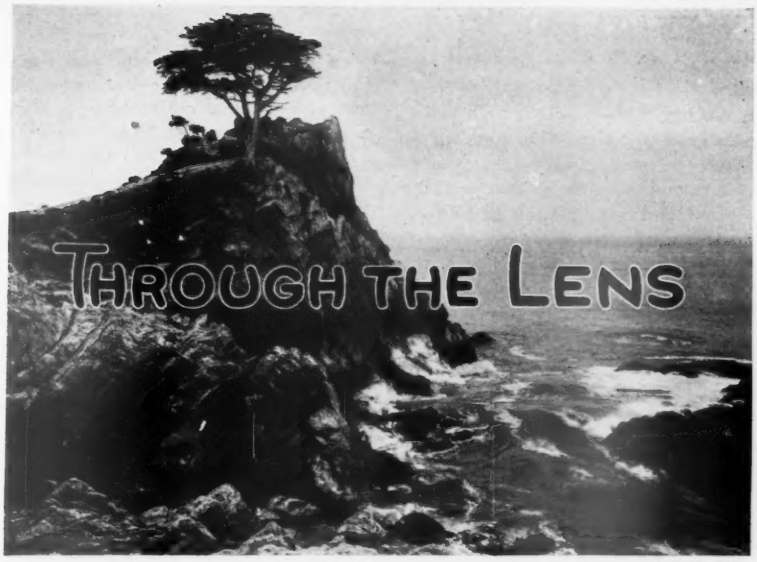
According to National Forest officials and those of state forestry organizations, a startling number of the fires have been incendiary, started to provide work for unemployed persons in fighting them. In several cases successful prosecutions have been made on account of incendiary fires in National Forests.

On September 14, with most of the fires in the West under control, an Associated Press dispatch from South Dakota stated that more than 1,000 fire-fighters had been thrown against a devastating wall of flame in the Black Hills near Deadwood. Nearly 60,000 acres of forest land had been burned over by the fire which started September 10.

In northwestern Minnesota more than 300 homeless farmers were being cared for by the Red Cross as a result of a fire which swept a large grass and forest area near Wayland and Baudette. Three persons are known to have been killed. They are Paul Dixon, a farmer of Wayland, and Marvin Myrold and Alfred Bogan, farmers, who lost their lives near Grygla. Ole Larson, a homesteader, of Baudette, was reported missing.

In the Baudette region a crew of men was put to work burying dead animals which threatened to become a menace to health after being burned in the fires.

From Livingston, Montana, on September 14, came a report that a camping party headed by Floyd Gibbons, famous war correspondent and radio announcer, had joined in fighting a menacing fire they discovered in the Yellowstone National Park. More than fifty men were on the fire line.



Fred H. Kiser

Short Lessons in Photography for the Outdoorsman

WHAT'S THE MATTER WITH THE PICTURE BUSINESS?

Conducted by FRED H. KISER

WHAT *is* the matter with the picture business, if anything? My feeling is that much is the matter, and that it can be explained in four short words—too many poor pictures. There are, however, a number of positive factors which may prove more enlightening—the idea that pictures are a luxury, the belief in some quarters that they are out of date, and the valuation of the foreign label. Add to this the quality of pictures produced and distributed. The pictures of today are in general a poor lot. Under the spell of financial depression everything that can be sold at a low price is placed on the market. The picture market is no exception. Artists are sacrificing quality for price, some through necessity, others because it seems to be the trend of the time. It is a killing practice, especially for the young photographer attempting to establish a reputation, and my belief is that now is the time to maintain or establish reputations in the picture field through loyalty to your clientele. By this I mean your productions must not be cheapened, that the standard upon which your reputation has been built, or upon which you hope to build it, must not be lowered. It is the difference between success and failure. Without thought it might be said that pictures are a luxury. It is quite true that you cannot eat or wear them, but neither can you eat chairs and tables. Their trading value, perhaps, is beyond consideration. But they have a very definite place—in the home. They are as much of a necessity as chairs, tables, or radios. You can prove it to your own satisfaction by hanging from six to eight in your living-room,

© Fred H. Kiser

Fittingly named "Heaven's Peak"—this view in Glacier National Park is typical of American scenery and American photographic art at its best.

or removing those that are already there. Bare walls are as uncomfortable as dining standing up.

The idea that pictures are out of date cannot hold water. Never before have pictures been so universally used and so truly appreciated. Interest in photography—an interest that has increased by leaps and bounds in the past few years—has developed the use and appreciation of pictures more than any single factor.

Now I come to the chronic ailment of the industry—foreign made pictures. As I view the situation the people of America are foreign crazy. There is some legitimate excuse for one to buy some few things of foreign make, but there is certainly no reason to purchase pictures, with the exception, of course, of paintings positively known as original creations of the "old masters." I believe Americans should reverence to a sane degree a great art of the past, but they should appreciate and actually pay for pictures in accordance with their true value and merit. When we come to things utilitarian, America is confident of making the best, but with art and craftsmanship, the prevailing custom demands it must come from abroad to make it acceptable. The market is swamped with the tag-ends of various pictures—so called "European modern art"—the cheapest kind of stuff in reality. For this is Europe's dumping ground for all the shop-worn, cheap and experimental pieces of craftmanship.

America must create and maintain an art of its own. All that is needed is a few people of vision and culture to lead the movement, and I am confident the public will change its tactics and stand solidly behind it. This is a good time to make a start. The nation is in the throes of depression, and if people decorate their homes with all kinds of American made craftmanship, it will help enormously the unemployment problem and create a cultured movement which will make life more worth while for all.

"THE FOREST THAT FIRE MADE"

(*Continued from page* 584)

from every angle the scent of fire became constantly stronger. But how could fire stop everything else yet encourage longleaf?

A peculiar habit of growth of longleaf possessed by no other pine gave the clue for the final solution of the tangle. We expect all woody plants as soon as they germinate to send up a stem in search of light but longleaf does no such thing. It forms a bundle of leaves in the grass and for a period of five, ten and no one knows how many years, it builds a root system and stores its reserve food there. If fire causes it to shed its needles it merely calls on the reserve food supply in the roots to form a new set and goes on growing. No one knows what determines the start of its upward growth but when it is ready it sends up a husky shoot and makes a rapid growth, often three feet or more in one year. Other pines spend their energy of the first year in building a stem and top which are easily destroyed by fire and the seedlings are killed.

The longleaf pine has two serious enemies—the hog and the brown spot needle disease. Hogs root the seedlings up and can live on the stored food material in the roots. However, hogs had no effect on the virgin stand for there were no hogs until the Spaniards introduced them. The needle disease is caused by a fungus which is often a very serious enemy of the young seedlings underneath a "rough" of dead grass. Burning the dead grass in winter is an effective means of control.

The picture now clears up. Where seed trees are available all that is necessary to get a pure stand of longleaf without a hardwood undergrowth is to have frequent grass fires. Indians and lightning could and did set fire to the dead grass and strawfall and the material was ready to burn over expanses hundreds of miles in extent any time after frost and in the summer if it had not burned the previous year. Fires offered no threat to the life or property of the Indian for they were not forest fires but merely grass fires that cleared the undergrowth of grass and hardwoods, making travel easy as it does today. No roads or fields were in the way and fire could go across or around the head of small streams until it reached large river courses or was rained out. In the year 1773 the famous botanist William Bartram traveled with the Indians over much the same trail as De Soto from South Carolina to the Mississippi river and gave detailed descriptions of the longleaf pine country. He speaks repeatedly of the open pine forests, describes Indians chasing deer on horseback through the woods and says of Indians setting fires: ". . . which happens almost every day throughout the year, in some part or other, by the Indians, for the purpose of rousing game, as also by the lightning. The very upper surface of the earth being mixed with the ashes of burnt vegetables, renders it of sufficient strength or fertility to clothe itself perfectly with a very great variety of grasses. The cattle were as large and fat as those of the rich grazing pastures of Moyomensing and the chief ordered some of the best steers to be slaughtered as a general feast in compliment of our arrival." Thus two hundred years after De Soto, the Indians were still burning the grass and the white men no doubt continued the practice directly after them.

If, at rare intervals, fire gave slash and other pines a chance to start on the hills, they found longleaf already in possession of the ground. This confined hardwoods and pines other than longleaf to the bay heads and swamps where hot fires could not reach them. Longleaf could rarely establish itself in the wet places because in the five years or more necessary for it to start height growth, the other species had already topped it and shaded it out.

Thus, we have "The Forest That Fire Made" and "The Forest That Fire Protects," for where fire is kept out for a number of years and a heavy rough of grass and pine straw accumulates, a summer fire during a dry time gives a real forest fire that actually kills saplings of good size. Winter grass fires in the southern longleaf pine areas appear to be highly desirable as a means of checking undesirable species of hardwood, preventing the formation of a jungle, and encouraging the growth of grasses and legumes to enrich the soil and as a range for cattle and quail. Without annual grass fires the grasses are smothered out and neither cattle nor quail can long exist in such a forest.

The field of study for the use of fire under other species of pine after they are once established, is a broad one. The strawfall from pines gives annual fuel that, if burned during the winter while the trees are dormant, causes little if any damage and prevents the piling up of a fire hazard that may later cause a real forest fire. Forest owners may yet turn to the use of fire to fight fire and get fire insurance for the cost of a match by knowing how and when to use a match as the natives of the southern piney woods have known for generations. To these people fire was not a master but a servant.

William B. Chamberlin

The buffalo herds which once roamed the wide prairies.

Ever the Chase

By JOHN C. FROHLICHER

"NEW people came into this country every year—came from the East the way the buffalo came from the South every spring. It wasn't so bad, but they had to kill off all the old-time game an' birds, an' now they're bringin' in their own stuff to shoot at."

A long-haired Montana trapper, almost the sole survivor of the race of mountain men who blazed the trails after Lewis and Clark had explored the main waterways, was talking, a little garrulously.

"The first thing that went was the buffalo. Sure, I helped—I'm to blame, too. But they was so many of them! Then came the antelope on the plain, an' the bob wire fixed them. The pilgrims ain't brought nothin' to replace the buffalo an' the antelope.

"Of course the birds had to go. When I was a boy in this country — in the sixties — a covey of prairie chicken would get up, an' you couldn't tell from the noise but what it was a herd of buffalo stampedin'. But these was killed out.

Charles H. Scribner

A nesting blue grouse.

"An' even the fish went. I used to see the big spring run of native trout in the Missouri, an' see where they'd try to jump Great Falls. Lots of them never made it, an' the loafer wolves was fat from the fish they was able to get.

"The blue grouse an' ruffed grouse an' fool hen hung on for a long time. But diseases from the farmer's chickens spread to the grouse, an' they have gone. I thought the pilgrims would be satisfied then to put their guns away forever. But they ain't.

"I just took a little sashay over into Idaho an' Oregon an' Washington, an' come back through Salt Lake an' Wyoming to the east side of this Montana range. Honest, I couldn't believe it. They was birds, game birds, aplenty—but they wasn't grouse.

"It was these Chinese pheasants an' the little gray feller with the brown and red band on his tail—you calls him the Hungarian pa'tridge. An' they was millions of them wherever I went. They had just about finished putting the run on the native upland birds for fair.

"I dropped into Corvallis down in Oregon, to see Gene Simpson, head of the state game-bird farm, an' he told me about these birds.

"Seems as if it all figgers out the same as humans. The first of us old fellers came in with Jim Bridger an' Sublette an' Manuel Lisa an' Ashley an' we trapped out a lot of beaver. That was really afore my time, but I heard about it from the old man. They trapped an' fought the Injuns, when the Injuns wouldn't give them what they wanted, an' they made the way easy for the next batch, the gold miners.

"The findin' of gold at Alder Gulch an' at Salmon brought in thousands of people who killed off all our meat, shootin' a lot just for the fun of killin'. Then we was shoved back, as well as the Injuns. Then came the railroads an' the cattlemen, shovin' out the miners. The gold was gone, just like the fur. After that came sheep, shovin' out the cattlemen, an' then the farmers and their bob wire got rid of a lot of the open range.

"The funny part of it all is that they was more people livin' in this country an' makin' a good livin' than ever before. An' it's just the same with the game.

"I couldn't figger where these Chinese pheasants, English ringnecks the boys calls them, could last. They are colored

like a young Injun doin' his first scalp dance, all red an' green an' purple, with a white collar around their necks. An' our native birds was gray an' brown an' matched up with the scenery.

"But as usual I'm wrong. Seems as if these birds has been raised for shootin' purposes in England for hundreds of years. Only the best birds was able to get by the hail of shot that these Britishers put up when the drives was on, the beaters chasin' the birds.

"An' so down through the years the Chink got wise to men. He lived in close quarters with them, a farm every seventy feet or thereabouts. An' he increased. He has the resistance to diseases that the American birds doesn't have. And the Chinks has increased.

"So the wing shots here, seein' the native birds fallin' away, began to spread the others. We got lots of game farms in this country now, an' they turn out thousands of birds every year. They're on the upgrade for fair.

"An' it seems proper, too. They's no sport like shootin' on the wing, an' these birds—the Chinks an' Huns both—is good shootin'. Looks like the boys a hundred years from now will be huntin', just the same as they have done in the past.

"Fishin' looks better. Ain't so many native mountain or cutthroat trout as they used to be, an' it's harder to get a mess when you want to stink the pan. But this rainbow trout seems to be doin' noble. He chased out the native. Now the suckers is chasin' him out. An' the black bass, set in these waters by the gov'ment and state fish departments, is chasin' the suckers an' makin' better trout fishin', along with black bass fishin'.

"Even the deer an' elk is on the gain. More of them every year back where I live. Looks prosperous for hunters so long as the Forest Service is helpin' protect the big game. But it ain't like the old days when we could kill buffalo an' trap beaver, an' live high on fat ribs an' tail soup."

"How about your business, trapping?" I asked. "Hell!" He spat at a buzzing fly. "The fur farmers is beatin' us to that—an' raisin' better fur than we can trap."

THE LOST HUNTER OF LAKE CHELAN

(*Continued from page* 607)

and I took up the trail into the rugged country of Safety Harbor Creek while the rest of the party turned back.

Miller never once turned. His tracks led to the top of a high ridge and straight down the other side, eventually into an old burn with dead trees lying about fourteen inches deep. Dusk was coming on so we headed for a clump of green trees in the center of the burn and established camp.

Snow had been falling for the past hour and it was soon dark. Our supper consisted of one slice of bread and one slice of bacon each, with a small cup of coffee made with melted snow. There was only room for one person to sleep at a time, so Steiner decided to try his luck. I kept the fires going and caught some sleep by leaning against a tree and did manage to get fairly well dried out. During the night Steiner insisted that I take the "bed." When I wakened I was so stiff I could scarcely move. Steiner was asleep against the tree and the fires were about out.

Our breakfast was as meager as our supper and as soon as it was light enough we started on the trail again. About a foot of snow had fallen, making tracking very difficult. Our trail led down the creek and there we struck the main Safety Harbor Trail. To our dismay the tracks led up stream. There were horse tracks in the trail which we knew had been made by miners, leaving the claims for the winter.

Just as we were debating on which way to go, we heard a shot far down in the valley. Our blood quickened. We answered twice without any answer. Knowing that other parties were searching for Miller, also that hunters were still in the hills, our duty was to follow the trail. We assumed that Miller had back tracked the miners and that we would find him at their cabin. It was a long hard climb of two miles, with the snow getting deeper as the elevation increased, but the clouds cleared away and the sun melted the snow on the trees.

Going up the last mile Steiner was breaking trail. The snow was three feet deep and we were going to the bottom at each step. Steiner was long-legged while I am short. He would step about four to six inches farther than I, which made following his steps very difficult. Had it not been for his loss of sleep the first night, I doubt if I could have stayed with him.

Just as we reached the clearing around the cabin Miller's tracks left the trail. We tried to follow them but found it impossible without snow shoes. We were continually off the trail on account of the falling splotches of snow from the trees and in one hour had made only 200 yards.

It was evident that if Miller had continued in the direction his tracks lead he was dead. No one could be expected to reach the lake down Goat Mountain with snow on the ground. We returned to the cabin, set up the stove pipe and built a fire. Miller had not been there. I made some bread and fried the remainder of our bacon.

Dinner over we struck up the back trail. The rest and lunch, as well as a broken trail made traveling much easier. There was an old cabin about seven miles down the creek where we could camp for the night. As we came to the junction of the cabin trail with the man-made trail we discovered real fresh tracks, which looked like Miller's, leading out from the cabin. With this encouragement and the feel of bare ground under our feet we decided to go on to camp. It was only seven miles and a fairly good trail all the way. We reached there at eight o'clock.

No one had heard from Miller. Several parties were in the field, some using the lake shore as a base and some our camp. We asked about the shot we had heard but no one else seemed to have heard it. It did not seem possible that a man could stay out four days without food and still be alive.

We hardly knew what to do. We were sure the last tracks we saw were Miller's and if he were down out of the snow there was little chance of tracking him. It was finally decided to send all parties out toward the lake at dawn. With this we turned in for a much needed rest.

About midnight we were aroused by two men entering the cabin. They said Miller had been found that day and had been sent to Chelan on a boat. He was very tired and very much bruised and somewhat dazed. For several days he remained in this condition and I was told that he later lost all his teeth from the exposure and lack of food. He is alive today only because of his wonderful physical condition and because he did not lose his head.

Absentminded

Add to Pitiful Figures: The Sunday tourist who spied some wonderful tree blossoms, and then discovered he forgot to bring along an ax.—*Judge.*

Lending Color to a Suspicion

A certain suburbanite who keeps pigeons loses a good many, and he has more than once suspected a neighbor of benefiting by his loss. Not long ago he bribed the neighbor's little boy with a dime, and asked, "Did your daddy find a bird yesterday?"

Willie nodded.

"Was it blue with some white feathers in it?"

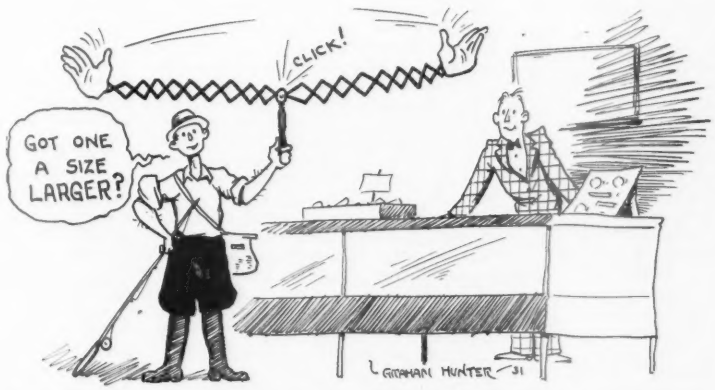
"Dunno," said Willie, pocketing the dime. "You can't tell their color when they're in a pie."—*Boston Transcript.*

Seeing Them All

In regard to China's refusal to let Roy Chapman Andrews remove any more dinosaur eggs from the Gobi Desert, our position is as it has been: When you've seen one dinosaur egg, you've seen them all—*Detroit News.*

Bouncing, Bouncing—

The low price of rubber is causing concern among our business men. It threatens to displace paper in the manufacture of cheques.—*New Yorker.*



Sporting Goods Specialty No. 9042—Automatic indicator for more accurate description of "the one that got away."

Beware!

A dignified Cornell professor broadcasts a warning against eating the cellulose wrappers that come around the smokes. And what we can't see is why he didn't also tell us never to eat the can the beans come in, too!

The heat must be awful at Cornell this summer!—*Cincinnati Enquirer.*

Little Quarrels

"What are your doing now?"

"I have found a new circus act—the friendship of a lion and a goat."

"But don't they quarrel sometimes?"

"Oh, yes, they have their little quarrels, but then we buy a new goat."—*Der Gemutliche Sachse.*

Reminder

And although the mosquito's not
So very large a beast,
He'll feed on you, then leave a hot
Reminder of his feast.
—*St. John Times-Globe.*

He'll Learn

The country doctor stopped to watch a perfoming dog in the street, and said to its owner: "How do you train it? I can't teach my dog a single trick."

The owner, with an innocent face, replied: "All you have to do is know more than the dog, and—"—*Tid-Bits.*

A Good Guess

Frost: "Where do the jellyfish get their jelly?"
Prost: "From the ocean currents, I guess."

Landlubber Whaling

While crossing the Common recently, an old lady noticed one of those men who go around jabbing a pointed stick into scraps of paper to gather them up. Stopping beside him she said kindly, "Don't you find that work very tiring?"

"Not so very, mum," he replied. "You see, I was born to it—my father used to harpoon whales."—*Boston Transcript.*

Troubled Waters

The best kind of troubled waters to pour oil on is that troubled with mosquitoes.—*Arkansas Gazette.*

Fossil Widow

The wife of an American archaeologist, renowned for his researches in Mongolia, has obtained a divorce on the ground that his prolonged absences amounted to desertion. It is a moving thought that among the martyrs of science must be recognized the pathetic figure of the fossil widow.—*Punch.*

Seasonable Sports

"Will you join our party in the jam preserves?" asked the first fly.

"No," said the second fly; "the lady of our house has baked a cake with icing on it. We're going in for winter sports."—*The Kablegram.*

No Secret

"Where do nuts come from?"

"They grow on trees."

"What kind of a tree does a doughnut grow on?"

"On a pantry."

But Is There Anyone—?

A Californian has been refused a bonus loan because records show he was killed at Château-Thierry and St. Mihiel and also died once in Texas. Apparently some one is unaware of California's revivifying climate.—*Life.*

Pinchot Names State Game Policy

At the first meeting of the new Board of Game Commissioners of Pennsylvania, Governor Gifford Pinchot presented the following propositions as the policy of his administration. They are as follows:

"First, Pennsylvania leads all the states in game protection and in the opportunities offered to the hunters of the Commonwealth. We are first. We must not only remain first, but increase our lead.

"Second, I hope the Game Commission will keep clearly in mind the need for promoting friendly relations between the farmers and landowners of Pennsylvania, and the sportsmen of the state. The better these relations are, the less land will be closed to shooting.

"Third, the Game Commission in the past has not always been free from politics. You have been selected wholly on merit and without regard to the political advantages of the administration. I want you to keep yourselves as Commissioners and all of its subordinates as employees of the state entirely out of politics. You have just one duty, which is to promote the interests of game and the sportsmen of Pennsylvania. Stick to it."

William T. Cox Named Conservation Director of Minnesota

William T. Cox, the American forester selected in 1929 by the Government of Brazil to organize a national forest service for that country, has been named State Conservation Director of Minnesota. His appointment is the first action in reorganizing conservation work in the State. Appointments to head the various conservation departments under Mr. Cox have not been announced.

Mr. Cox, who returned to this country during the past summer following his organization work in Brazil, has long been identified with the conservation work of both Federal and state governments. He was at one time state forester of Minnesota and later superintendent of the Upper Mississippi River Wild Life and Fish Refuge. From 1901 to 1911 he was associated with the United States Forest Service.

New Hampshire Endorses Forest Purchase Program

The responsibilities of state and Federal goverments for forest and recreation properties, forest taxation, roadside beautification and rural betterment were discussed at the thirtieth annual meeting of the Society for the Protection of New Hampshire Forests at New London, New Hampshire, on August 26 and 27. Honorable John Q. Tilson, Representative from Connecticut and Republican House Leader, described some of the struggles which he engaged in to secure the passage of the Weeks Act in 1911 and expressed faith in the future of eastern National Forests. Honorable Wilbur L. Cross, Governor of Connecticut, and Honorable Charles W. Tobey, recently Governor of New Hampshire, discussed the state responsibilities for maintaining and protecting forest lands. James E. Scott described some of the developments on the 800 square miles of forest land over which he has charge as supervisor of the White Mountain National Forest. G. H. Collingwood, Forester for The American Forestry Association, outlined the accomplishments secured during the twenty years since the passage of the Weeks Act and presented the immediate difficulties which stand in the way of securing desired appropriations with which to complete the program set up by the National Forest Reservation Commission. Before adjourning the Society passed resolutions endorsing continued appropriations for purchasing forest land in the eastern half of the United States.

William T. Cox

The New Hampshire tax system was described as outgrown during discussions which followed a paper by E. C. Hirst, Secretary of the New Hampshire Tax Commission and former state forester. Professor James H. Toumey, director of the Yale Demonstration Forest near Keene, New Hampshire, declared that excessive taxes have been largely responsible for holding the net returns on the capital value of this forest to about one and one-half per cent. Discussion which followed indicated that New Hampshire's tax system must be changed and the Society reaffirmed its belief in the severance tax.

Gifts to the state through the Society for the Protection of New Hampshire Forests of several plots aggregating over 300 acres were reported. These will be maintained for public use and recreation and are a part of a much larger program of roadside parks which are being developed under Secretary-Forester Philip W. Ayres, by his assistant, Mrs. Charles H. McDuffee. Mr. Ayres presented an opportunity for the Society to acquire 1,600 acres on the upper slopes of Kearsarge Mountain, which would later be transferred to the State Forestery Commission for administration. Before the close of the meeting more than one-eighth of the funds necessary for the purchase of this land was subscribed by members of the Society who were present.

A feature of the concluding session was the conferring of prizes and medals to members of the New Hampshire 4-H Clubs who have conducted special work in forestry. Mr. W. R. Brown of Berlin, New Hampshire, presented three prizes aggregating $50 in gold to three groups of boys, and The American Forestry Association medal was given to a boys 4-H Club in Epping.

Forestry Fliers Die Attempting Rescue

Four Canadian flyers of the Provincial Forestry Service were killed on August 19 at Rainy Lake, Ontario, just as they learned that the lost pilot they sought, was safe.

The party was searching for George Delahay, pilot of a flying boat which was wrecked in a storm. Flying over the lake the rescue party sighted signals from an island where Delahay had been taken by a party of American campers who rescued him after his plane sank.

As the four flyers' plane banked to land, Delahay and others on the island saw it drop into the lake from 200 feet. The dead were Philip A. Hutten, R. V. Greer, J. V. Stewart and A. J. Unciman, all Ontario flyers.

Reforestation Law Approved in Washington

Following approval at last fall's election of an amendment to the Washington State Constitution authorizing enactment of special forest tax legislation, a reforestation measure has passed the Legislature and been approved by the governor. The new law provides that cut-over lands classified by the State forest board as reforestation land shall be assessed at a flat rate of $1 per acre if west of the Cascades and fifty cents per acre if east of the Cascades, and that timber produced on such lands shall be subject to a yield tax of twelve and one-half per cent when harvested.

Park Executives to Gather

The annual convention of the American Institute of Park Executives and the American Park Society will be held at Toronto, Canada, September 28 to October 2. Headquarters will be at the King Edward Hotel.

National Parks Exhibits at Yorktown

Exhibits from practically all of the National Parks will be on display at the Yorktown Sesquicentennial Celebration from October 16 to 19, the National Park Service has announced.

With the establishment of a National Park in the Great Smoky Mountains of North Carolina and Tennessee and National Parks now in the making in Virginia, Kentucky and Michigan, Eastern visitors to the Sesquicentennial unfamiliar with the great parks of the West will be much interested in these exhibits.

Until the Great Smoky Mountains Park was created, the only National Park in the East was Acadia National Park near Bar Harbor, Maine.

The Park Service will have three tents on Celebration Field at Yorktown. An exhibit containing historical relics of Virginia's Colonial era, which relate especially to events connected with Colonial National Monument, will be on display in the headquarters tent.

A second tent will contain exhibits from Yellowstone and Yosemite National Parks, the Petrified Forest National Monument and many others of the twenty-two National Parks and thirty-four Monuments which make up the Federal Park and Monument system begun in 1872 when General Grant, then President of the United States, set aside the area now known as Yellowstone as the first National Park in the world.

Motion pictures of some of the best-known parks, all world-famous for beautiful scenery, will be shown in the third National Park Service tent.

Forestry Appropriations Discussed by Budget Director

Every effort is being made to hold down the federal appropriations for the fiscal year beginning July 1, 1932, according to Colonel J. Clawson Roop, Director of the Bureau of the Budget. This was the impression given during a conference in his office in the Treasury Building on September 9, when G. H. Collingwood, Forester for The American Forestry Association, set forth some of the things for which the Association is working. The conference was preliminary to Departmental hearings which were scheduled to begin on September 12.

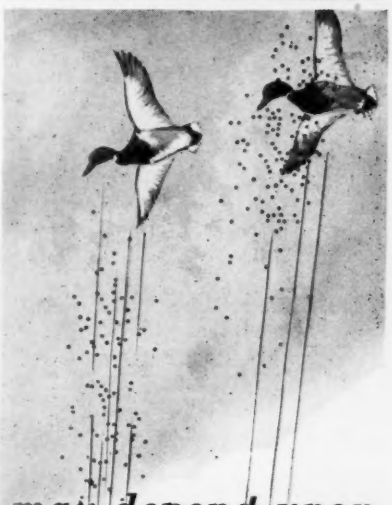
Mr. Collingwood described local conditions which make desirable carrying forward aggressively the program for purchasing lands to add to the National Forests of the eastern states. He cited the interest evidenced at the annual meeting of The American Forestry Association in Asheville, North Carolina, and more recently the endorsement of the Society for the Protection of New Hampshire Forests. Present land values make probable the effective purchase of a million acres of land, were five million dollars available. This emphasizes the need of carrying on the program with an appropriation equal to or greater than the existing sum of two million dollars.

Although not receptive to the arguments for increased appropriations for forest purchases, Colonel Roop appeared favorable toward the expenditure of federal funds for more effectively protecting the existing forest land, and for planting the denuded areas to forest trees. Under this head the Association's forester pressed the need for adequate funds to protect the National Forests from fire, insects and especially white pine blister rust in the forests of Idaho and the northwest. At the same time he urged more liberal appropriations for the protection of the National Parks, the forests or the Indian Reservations and on the Public Domain, and to cooperate with the States under the Clarke-McNary Act. He also expressed the hope that the Budget Bureau would approve the full authorization for forest planting as established in the Knutson-Vandenberg Act.

Efforts were made to picture the responsibility which the Forest Service has for the health and physical well being of more than 32,000,000 people who have visited and camped upon the National Forests during the past summer. With only $67,000 available to provide sanitary facilities and assure pure drinking water to this army of pleasure seekers, the facilities of the Forest Service have been severely stressed. The Association is urging that this be increased by at least $100,000.

During such times as this when every source of income and every means of securing profitable employment is desired there is an especial reason for carrying on research. The program of forest research set up under the McNary-McSweeney Act and that contemplated for the more effective control of erosion warrants additional expenditures of $500,000, but Colonel Roop gave no indication that such an amount would be granted. Chief among the projects which The American Forestry Association believes should be encouraged is the more rapid completion of the forest survey now being conducted in the Pacific Northwest and the Southern pine region; studies in the southern hardwood region; economic research in the Southern Appalachians to determine more effective ways of managing land now in private ownership; investigations leading to the most effective ways by which the cattle industry may use grazing in the pine forests of the South and Southwest, and the effect of fire upon grazing as well as timber growing; and efforts to determine ways of designing wooden houses and barns that may be more economically as well as more permanently erected.

Duck for Dinner



may depend upon whether you shoot

Super-X

Many shooters say duck shooting is becoming more difficult each year . . . More shots are at longer ranges. Judging by the ever-increasing preference for *Super-X* shells, they're right!

The famous *Super-X* long-range shell—the load with the *Short* Shot String—betters your chances of sitting down to steaming roast duck at the end of a cold day in the blind.

Before *Super-X* was developed, shot pellets strung out in flight from 15 to 40 feet. Many pellets lagged behind, too late to reach the swiftly moving bird.

Super-X brings down more ducks, with fewer cripples, because the stringing out of the shot is cut nearly in half. At 60 yards approximately *80% of the effective pellets are bunched within a space of only 8 feet.*

For sportsmen who want a superfine load for duck, goose and turkey shooting, *Super-X* is also offered in a special load with golden *Lubaloy* (copperized) shot. It gives even shorter shot strings and longer effective range.

In all Western shells the stringing of the shot along their line of flight is definitely controlled. The shot string of every *Xpert*, *Field* and *Super-X* shell is held to the standard found best for each purpose. It results in *more hits in every box* of Western shells. Let us send you free literature.

WESTERN CARTRIDGE COMPANY
1015 Hunter Ave., East Alton, Ill.
Branch Offices: Jersey City, N. J.; San Francisco, Cal.

Hunters IN THE Northwest

Before starting, decide who will mount your prized trophies—all you will have to preserve memories of your trip. Jonas' master craftsmanship costs no more—often less. Investigate. Write today for Field Guide and Catalog FREE.

1042 Broadway JONAS BROS. Denver Colo.

FOODS ATTRACT DUCKS GAME ~ BIRDS ~ FISH

Plant water plants—wild grains — berry-bearing shrubs—99 kinds. **Duck Potato, Wild Rice,** etc. We show you how. 35 years' successful experience. Planting helps—folder free. Ask about our personal investigation and planting service.

TERRELL'S
AQUATIC FARMS AND NURSERIES
24 C BLK. OSHKOSH, WIS.

ATTRACT WILD DUCKS

Natural aquatic food plants will bring thousands of Wild Ducks to your favorite waters. Plant WILD RICE, WILD CELERY, PONDWEED SEEDS, and others guaranteed to produce results. Prices reduced, discount on early orders. Write for expert planting advice and free literature.
Wisconsin Aquatic Nurseries, Box 331-K, Oshkosh, Wis.

SCOTTISH TERRIERS

Beautiful stock now ready for delivery
Priced Reasonably
LOGANBRAE KENNELS
Rutland Vermont

GOKEY BOTTE SAUVAGE
"The best all-around boot in the World"
Manufactured Since 1850
Water-Proof, Genuine Pac Moccasin, Hand Sewed, Made to Measure. A pound or two lighter than the average boot; easy to put on and take off; no books to catch. Ankle strap holds boot in place, and also acts as ankle support
Write for measure blank and Footwear Catalog.
FREEMAN-THOMPSON SHOE CO.
Dept. 31. St. Paul, Minnesota

Remarkable
New Arms Catalog!
Fully Illustrated
Largest Stock in U. S.
American & Imported Arms & Ammunition
Full Line *Paper Targets*. Game Laws, Valuable Data, All Ballistics, New Gun Models, Air Guns, Telescopes, Engraving, *Restocking*, Skeet and Trap Equipment, Fine Shot Gun Barrels Replaced, Gun Repairing, Gun Club Accessories, Articles by Leading Authorities.
Send 25c in stamps for this 144 page catalog.
A. F. STOEGER, INC.
Oldest Exclusive Gun House in America
509 Fifth Ave. (at 42nd St.), New York

Plane Landing Fields Being Developed in National Forests

Airplane landing fields are being developed in the roadless regions of the National Forests, and eventually they are expected to be of great value to commercial and private aviation by providing emergency landing places, according to Roy Headley, assistant forester of the Forest Service.

Recently, he said, 100,000 pounds of fire-fighting supplies were transported by plane to a landing field in a Montana National Forest to which roads do not penetrate, at lower cost than would have accompanied the usual means of transportation, and in one recent week 100 fire fighters were taken to a roadless region in the Bitterroot Mountains in Idaho.

Reduction of costs by airplane transportation can be effected only under unusual circumstances and will never become general, he said. This service is valuable and cheaper in reaching otherwise almost inaccessible points in National Forests, but it is more expensive where there are any kind of roads.

"This landing field is in the center of a large region into which no roads have been constructed," he said. "For various reasons it is not likely that roads will be built. The possibility of transporting freight by plane more cheaply than it can be done by methods which include pack animal transportation removes some of the necessity for building roads for forest protection. Airplane transportation of freight has the very decided advantage of higher speed than can be attained when pack animal transportation must be used for part of the route."

Entertains Extension Foresters

Extension Foresters from the northeastern states, Illinois and Tennessee, were guests of Congressman John D. Clarke at his home near Delhi, Delaware County, New York, on September 2. They were served lunch in the sugar house which the Congressman has fitted up as a 4-H Club Camp, and later visited his maple grove and his pine plantations.

This was part of a summer field meeting of Extension Foresters, during which they assembled at Fernow Hall, Cornell University, in Ithaca and spent September first visiting farm forest management and planting demonstrations in the vicinity of Cayuga Lake. While in Delaware County they went over the cutting operations of George Treyz and son near Cook's Falls. During the past twenty years typical hardwood areas in this portion of the Catskills have been clear cut to supply material for wood distillation and charcoal plants. The foresters were impressed by the remarkable reproduction of sugar maple and birch.

Roosevelt Addresses Foresters

Governor Franklin D. Roosevelt greeted the members of the New York and New England Sections of the Society of American Foresters at his home in Hyde Park, Dutchess County, New York, on September 4. The Governor outlined a plan whereby a group of owners of forest estates such as his might pool their holdings and employ a forester to manage the combined properties and market the products cooperatively. Later, driving his small car, he piloted the foresters through the estate to a grove of virgin tulip poplar, hard maple and hemlock. During the past fifteen years the Governor has been planting some of the open fields to forest trees. He expressed his special enthusiasm for tulip poplar.

This was part of the program of the annual summer meeting of the New York and New England Sections of the Society of American Foresters, which assembled at Poughkeepsie on September 3. Arthur S. Hopkins, Assistant Superintendent of the Forests of New York State, acted as chairman and master of ceremonies. The opening dinner was attended by ninety-six foresters. Professor Ralph C. Hawley of the Yale Forest School told of the Eli Whitney Forest and Professor Ralph S. Hosmer of Cornell University spoke on some of the work carried on in New York State.

During the morning of September 4 they visited the forest plots on the Archibald Rogers estate in Dutchess County, whose forest management plans date back to 1905. This is one of the first examples of the early extension work of the Forest Service, and is described in Bulletin 465 of Cornell University, by Professor J. Nelson Spaeth, who guided the foresters over the area.

Baker Succeeds McCarthy at Columbus

The Secretary of Agriculture has appointed Willis M. Baker director of the Central States Forest Experiment Station, at Columbus, Ohio, to succeed E. F. McCarthy, who recently resigned to become professor of silviculture at the New York State College of Forestry, at Syracuse. Mr. Baker leaves the directorship of the Pennsylvania Forest Experiment Station at Mont Alto, which he had occupied since March 16, 1930. He graduated from Pennsylvania State College in Forestry in 1914 and served with the U. S. Forest Service in the Southwest until 1917. He resigned to go with the New Jersey State Forest Service and from 1922 to 1930 was Associate State Forester.

E. O. Ziegler will leave the Southern Forest Experiment Station at New Orleans to become director of the Forest Experiment Station at Mont Alto. Dr. Ziegler was formerly associated with the Forest School at Mont Alto and is familiar with the region.

Honor Founders of Redwood League

Government and State officials assembled at Dyerville, California, on September 12, to dedicate the world's tallest known tree in honor of the three founders of the Save-the-Redwood League.

The tree, a Redwood 364 feet high, was dedicated to Dr. John C. Merriam, president of the Carnegie Institution, Washington, D. C., and a director of The American Forestry Association; Dr. Henry Fairfield Osborn, president of the American Museum of National History, New York; and Madison Grant, also of New York.

Forest Service Nursery in Wisconsin

Sowing nursery beds with tree seeds for reforestation of areas of the National Forests in the Lake States region began this year at Rhinelander, Wisconsin, where a tangled area of brushy cut-over land will eventually give place to a large Forest Service nursery, according to The United States Department of Agriculture.

With a planting program of about 25,000 acres for this year, the United States Forest Service is preparing for an increase in the project of putting idle forest lands back to work. The Rhinelander development will be one of several scattered throughout the nine forest regions of the United States. At least 14,000,000 seedlings a year will be produced at this nursery when it reaches maximum capacity. Trees from the Forest Service nurseries are used almost exclusively for replanting areas burned over before the land was included in the National Forests.

Assail Critics of Audubon Society

Endorsing the policies of the National Association of Audubon Societies in the field of wild-life conservation, Dr. Thomas Barbour, director of the Museum of Comparative Zoology, at Harvard University, and Chauncey J. Hamlin, president of the Buffalo Museum of Science, in a report recently made public based upon nearly a year of investigation, seriously questioned the motives of members of the so-called "Emergency Conservation Committee," which had circulated charges against the Audubon Society and its official personnel.

At the annual meeting of the National Association of Audubon Societies in October, 1930, a committee was appointed upon motion of United States Senator Frederic C. Walcott, of Connecticut, to examine into certain charges which had been widely published in pamphlet form by the "Emergency Conservation Committee." The charges alleged acts and practices of the Association which were asserted to be entirely foreign to the purposes for which it was formed.

The charges against the National Association, and Dr. T. Gilbert Pearson, its president, were contained in pamphlets entitled *A Crisis in Conservation* and *Compromised Conservation*, circulated by the anonymous "Emergency Conservation Committee." The first pamphlet was signed by W. De Witt Miller, Willard G. Van Name and Davis Quinn. The first two were at the time of publication employees of the American Museum of Natural History, while Quinn, says the committee report, "is completely unknown to fame, has never been conspicuous either as a bird lover or conservationist." A statement by George H. Sherwood, director of the American Museum of Natural History, is quoted to the effect that the museum knew nothing of the publication of the pamphlet and "not only does not approve of this pamphlet but believes that it will convey a wholly false impression of the existing state of affairs in the conservation of bird-life, and by discrediting the efforts of organizations whose records of achievement are unquestioned and worthy of all support, it feels that this pamphlet may do much harm.

"After making careful inquiry, the authorities of the museum find that, with the exception of the two signers of this pamphlet, the members of its staff whose experiences and sources of information entitle them to an opinion, agree that there has never been a period in the history of bird-protection when our laws were more far-reaching, better enforced or more strongly endorsed by public opinion."

Commenting upon this phase of the charges against the Association, Dr. Barbour and Mr. Hamlin observe that "it does not seem worthwhile to go into the various details which show that this committee-so-called is simply a small, self-appointed group representing nothing but certain personal interests; and there is little point in attempting to analyze the motives of the persons hostile to the association who have used this method of attack." The report dismisses the claim that the Audubon Society has an interlocking directorate with the statement that "the type of person represented by the directors of the association is inevitably interested in more than one good cause."

Relative to the charge that the National Association had failed to support bag-limit reduction bills, the committee suggests that the matter of bag-limits is an administrative problem, not an executive one, adding that such matters "should no more clog the machinery of national government than of state government."

The charge of the "Emergency Conservation Committee" that Dr. T. Gilbert Pearson had cooperated with "the killers" is described by the committee as "a long and rather turgid tirade" and most of the material presented "is similar to that which everyone who has had any part in dealing with the activities of the so-called 'zoophile cults' recognizes immediately. The committee defines the zoophile as one whose arguments are always based upon sentiment rather than reason, who believes that if a forest is to be protected and preserved no tree should ever be cut down, and who believes that no species of bird or animal can be adequately protected if any individual of the species is ever killed. With this statement of the case, the committee concludes that "it is not worthwhile to attempt to analyze or discuss the charges made" since "they are not worth the time it would take."

Seventh Shade Tree Conference

Discussions of roadside trees, the shade tree in landscape architecture, and shade tree pathology featured the seventh National Shade Tree Conference at the Boyce Thompson Institute. Yonkers, New York, late in August.

"Trees are the backbone of any scheme of landscaping," said A. H. Alexander, of Alexander and Strong, landscape architects, Cleveland, Ohio, who also made a plea for greater cooperation between the architect and tree experts in the planting and care of trees. F. H. Mulford, of the United States Department of Agriculture, caused a very interesting discussion on what trees are best suited for roadside planting. The most attractive roadside tree grows naturally, he said.

Other interesting papers were read by Dr. William Crocker, director of the Boyce Thompson Institute, on the effect of illuminating gas on trees; by Dr. E. P. Felt, of the Bartlett Tree Expert Company, Stamford, Connecticut, on the effect of certain important insects on trees; W. H. Rankin, of the same company, on the new elm disease; G. P. Clinton, of the Connecticut Forest Experiment Station, on some effects of drought on shade trees.

Charles Riordon Dies

Charles Riordon, one of the outstanding pioneers of the pulp and paper industry in Canada, passed away on August seventeenth, at his home in Montreal. He was eighty-four years old. For half a century he was president of the *Mail and Empire* newspaper in Toronto, and among his many interests outside the pulp and paper industry is included that of one of the founders of Ridley College, St. Catherines, Canada.

Hirsch-Weis
CRUISER
STAGS

93,000
Men keep
WARM & DRY
in Hirsch-Weis STAGS

THEY'RE worn the world over during the heaviest rains and the coldest weather.

Hirsch-Weis garments are made of 24-oz. all-wool Oregon flannel.

Guaranteed water-proof.

Eight roomy pockets, (large game pocket in back.) Styled for comfort. Built for wear. Breeches to match.

If your dealer can't supply you, order direct. Use coupon below.

COLORS
Plaid:
Red & Black
Brown & Black
Green & Black
Solid:
Navy Blue
Hunter's Red
Forest Green

$11.00
Postage Paid
Sizes 34 to 48

HIRSCH-WEIS MFG. CO., Portland, Oregon, Dept. "A"
Gentlemen:
☐ $11.00 enclosed. Send STAG {Chest Size ..... Color .....}
☐ $ 8.50 enclosed. Send Breeches {Waist Size ..... Color .....}
☐ Please send Catalog of Garments in Actual Colors.
Name .....
Address .....
City .....

When You Take That Hunting Trip, Sleep In A
DOWN-RIGHT-COMFORT SLEEPING-BAG

ADAPTABLE—to any temperature, anywhere, at any season of the year, because there are three layers of covering which can be adjusted as needed without getting up.

SANITARY—because the flannel lining is easily detached and washed or cleaned.

LIGHT and COMPACT—It measures only 28 by 9 inches when packed in its waterproof pack bag.

Send today for free descriptive circular

PHIL W. HANNA CAMP EQUIPMENT
Dept. AF 19 S. La Salle St., Chicago

American Woods

A collection of actual wood sections (showing end, quarter and flat grains of each species), with text, telling uses, properties, distribution, etc. The plates in which the thin sections are mounted are removable for examination.

Issued in 14 volumes, 25 species in each. $10 and $15 per vol., according to binding. Send for list of species in each volume.

Lantern and Microscope Mounts of Woods, Tree Studies for Lantern, etc.

Handbook of Trees

The 891 illustrations enable one to identify all of the trees east of the Rocky Mountains and north of the Gulf States at any season.

$8 and $15, according to binding.

Write for further information

ROMEYN B. HOUGH CO.

Lowville, N. Y.

George S. Lee & Company
RUTHERFORD, N. J.

Publishers of Recreation Maps and tourist publicity material.

Write for samples and prices

MEMBERS OF THE AMERICAN FORESTRY ASSOCIATION

You are invited to join the Craggy Mountain Club of Western North Carolina. Membership fee, $25, entitles member and party of 10 persons to two weeks, exclusive use of furnished Club House, Bath House and Spring House on 200 acre mountain tract near Asheville, N. C. Altitude 2700 to 4000 feet.

Address: Howard R. Krinbill, Manager
1800 K Street N. W. Washington, D. C

Position Wanted

Graduate of Forestry from University of Georgia, with practical training. Experienced Public Relations man. Open for employment. References furnished. Address E. F. Boyd, Lignall, Georgia.

Ask the Forester?

Each Month Forestry Questions Submitted to the Association Will Be Answered in This Column. If an Immediate Reply is Desired a Self-Addressed, Stamped Envelope Should Accompany Letter.

Question: How does one make and use a Jacob staff?—*P. F., Oklahoma.*

Answer: A Jacob staff is a single stick four or five feet long, shod with an iron point, and with the opposite end fitted with a ball and socket joint. On this can be screwed a compass. This offers a satisfactory support for the compass and is sufficiently accurate with which to run lines and for crude surveying. With care and experience, one can run lines with a compass set upon a Jacob staff to a remarkable degree of accuracy.

Question: What is the fertilizer value of forest leaf litter?—*J. A. D., Massachusetts.*

Answer: A northern pine forest drops about a ton of leaf material each year, which according to analyses reported by the United States Forest Service contains from eight to sixteen pounds of nitrogen, two to three pounds of phosphorus, and two to three pounds of potash, besides considerable amounts of calcium and sulphur. The year book of the Department of Agriculture for 1917 reports that a ton of oak leaves yielded sixteen pounds of nitrogen, seven pounds of phosphoric acid and three pounds of potash.

Question: Can you help me in locating some successful plantings of *Thujopsis dolebrata?* —*J. T. B., Illinois.*

Answer: This tree, closely related to the common arborvitae and native to Japan, evidently does not easily adapt itself to our American climate. Inquiry among botanists, foresters and tree planters has revealed only a single specimen on the estate of Mr. William L. McKee, of Bristol, Rhode Island.

Question: Is it a good plan to permit the leaves to remain on the ground, or should they be raked, or be carried away and burned? Do they rot and add desirable fertility to the soil? Would it harm trees during the summer to build a large bonfire in the woods to burn up dead limbs, etc.? Does the smoke injure the trees?—*D. L., Massachusetts.*

Answer: Leaves add humus and fertility to the soil, and where they are not a nuisance they should be left as they fall. However, they need to be raked from a lawn or from those places where people will have picnics or will be walking. They can be carried away and burned or piled in a composte heap where they will rot after two or three years. Then they can be placed on the garden or lawn. By no means should one burn the leaves on the ground as they lay. This will destroy many of the more tender and desirable small plants and may injure the butts of the trees permitting rot to get in and eventually destroy them.

There is no harm in building a controlled fire in the woods if there is an open place sufficiently large that the heat from the flames will not scorch the leaves of surrounding trees. A fire small enough to be easily controlled can be replenished as it burns from other larger piles and the neighboring trees will not be harmed. The smoke from an ordinary fire will not injure the leaves of the neighboring trees.

Question: Where can I obtain about a dozen genuine chestnuts of the species that once grew in this section of the United States? In what kind of soil will these seeds grow best? —J. A. D., Pennsylvania.

Answer: It is doubtful if you could secure any chestnuts for planting in your region without going considerably south or west. Poss bly seeds can be secured from some of the commercial seedsmen.

Should you get the seeds they may be planted in any loose, well drained garden soil and should be cultivated in the garden for one or two years before setting them out. They will grow in practically any well drained soil.

This information is given with the firm conviction that to plant them will be a waste of time and money. Lancaster County, Pennsylvania, is in the midst of the region devastated by chestnut blight. There still remains enough of the blight so that any trees which may be planted will sooner or later become infected and die.

MIAMI to HAVANA

All Expense Tours from

MIAMI, FLA.

DAILY EXCEPT SUNDAY AND WEDNESDAY

3 Days	$62.50
4 Days	72.50
5 Days	82.50

MORRO CASTLE ALL EXPENSE TOURS

offer an unusual opportunity to visit the famous Morro Castle and Cabana Fortress—Tropical Gardens—Old and New Havana—The Casino—and other places of interest for which this gay city is noted.

Write us for Full Information

Morro Castle Tours

1727 K Street, N. W. **Washington, D. C.**

CONFERENCE OUTLINES TREE PLANTING PROGRAM

Officials of the United States Department of Agriculture met in the office of the director of Scientific Research, Dr. A. F. Woods, on the last day of August to discuss with the Council in charge the five-year program of the National Nut Tree Planting Project. Recognizing that numerous practical problems lie behind the sentimentally and historically valuable aspects of the project, which has for its goal the actual increase in number of nut trees and the stimulation of interest in tree planting through the planting of seeds from historic grounds, attention was directed on the cooperation to be given by each of the four sponsors.

O. H. Benson, national director of Rural Scouting, came from New York to speak for Boy Scouts of America. Federal Department

Walnut Tree at Historic Bull Run

of Agriculture officials who were present included Dr. C. B. Smith, chief of Cooperative Extension, Dr. C. W. Warburton, director of Extension, Dr. William A. Taylor, chief of the Bureau of Plant Industry, Dr. Eugene C. Auchter, principal horticulturist, and C. A. Reed, expert on nut culture and member of the Council. Ovid Butler, executive secretary, and G. H. Collingwood, forester, represented The American Forestry Association.

"Scout troops in areas on which there are nut trees have set aside a day for nutting when they will take part in the drive to collect 2,000 bushels of seeds for planting as one part of their contribution to this conservation program," reported Mr. Benson. Since the inception of the project the efforts of these young Americans have been directed toward the collection and planting of nuts, he revealed in a review of the history of the nut tree planting campaign. This year, in order that there may be no slip in securing the quota of seeds necessary to carry out a campaign which calls for the planting of a million trees annually for five years, Scouts will give one day to the locating of trees and the securing of permission from owners for the gathering of nuts and a second day during nutting season to the collection.

The second step in the program falls in the realm of the Agricultural Department, encompassing the receiving and handling of seeds.

Care will be taken that the tags of identity which are attached to the containers are not lost in order that not a single shipment loses its identity. Although participators in the project are asked to send in nuts that have already been hulled in order to reduce shipping charges and delay in handling, there are many cases in which this task must be done in Washington.

The counting or weighing into bags, tagging, and recording will be done under the supervision of Department of Agriculture experts. The instructions that will be sent to every person who receives seeds have been prepared under their direction.

In order that the Council may have little trees to distribute for special occasions, some nuts from every shipment received will be held for planting in nursery beds of the Department of Agriculture under the supervision of experts. These trees will serve a dual purpose, being the subject of research and the nucleus of many impressive tree planting ceremonies which attract popular interest.

The correspondence, records, and other office work will be taken care of, as it has in the past, under the direction of The American Forestry Association which has furnished office space and equipment for the project. Information for newspapers, magazines, and other publications as well as that for individuals participating in the project is sent out from there. Officials of this forestry conservation organization will continue to give time to the consideration of problems that arise and to assist in carrying out the program.

Under the five-year program the American Walnut Manufacturers Association, one of the most substantial donors to the project, will continue to supervise the work as it relates to the commercial field of timber, advising and directing through Mr. Green. Emphasis will be laid both on the monetary and esthetic value of walnut trees to planters.

Go Fishing?
Play Golf?
Ever Hunt?
Ever Wear

Ballard's *All Wool?*
Jack Miner Does

He knows that Wool is a non-conductor of heat; therefore, keeps body cool in summer and warm in winter.

We Uniform New York State Rangers and Maine Game Wardens.

J. O. Ballard & Co.
Malone, N. Y.
Inquire at Your Clothing Store
OLYMPIC SKI SUITS!
We Make Them in Authorized Colors of Our Quality and Workmanship

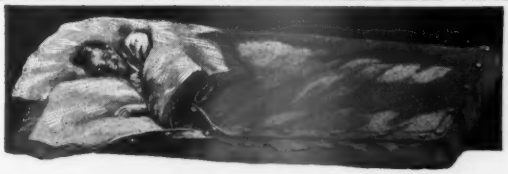
CHANNEL BASS 6-1 to 10-15 Trout, Croakers, Blues, Kings, etc. about 4-1 to about 11-20th.
Guides, Power Boats with Cabins and awnings. A-1 Hotel, 50 double rooms, 30 connect-baths. Sea Foods, Home Grown vegetables, Fresh milk, eggs, etc. Amer. Plan, day $3.50 and $4.00.

Channel Bass 25-58 lbs., Trout 1 to 10 lbs. Surf Bathing. Del-Mar-Va Stone Road or O. P. C. and N. EX. or via Norfolk. Hotel Wachapreague, Wachapreague E. Shore, Va. (Ocean Side) Booklets A. H. G. MEARS. (Ownership Management)

GAME AND FISH DEPEND ON FORESTS AND STREAMS. BOTH ARE DESTROYED BY FIRE. PREVENT FIRES AND SAVE OUR WILDLIFE.

WOODS ARCTIC DOWN SLEEPING ROBES

★★★ WOODS ARCTIC for below frost



★★ ARCTIC JUNICR for above frost

YOU get all the actual improvements there are, when you put your good money into a Woods Arctic Down Sleeping Robe. The world's best from every angle—not one exception. Ask the U. S. Navy flyers.

Fifty purchased for the U. S. Navy's new airship "Akron". Thirty long in use on the "Los Angeles." Why? No matter what your altitude, latitude or where-be-you—in a Woods Arctic "Eiderdown" you're sure of your right body-heat comfort. Thanks most of all to the incomparable insulation—Woods Everlive down from Northern waterfowl, with Harwood patent down equalizing.

Arctic 78" x 84", 14 lbs., $58.50; size 90" x 90", 15½ lbs., $67.50
Junior 78" x 84", 8½ lbs., $46.50; size 90" x 90", 10 lbs., $57.00

In robes interlined with pure virgin wool batt instead of down, we make the Gold Star and the Ranger. Respectively $26.50 and $20, both 78" x 84".

Woods Sleeping Robes are guaranteed to give full satisfaction. Sold by leading dealers all over North America, as the best. If you do not find them on display, please write to us. New descriptive folders FREE.

WOODS MANUFACTURING CO., LTD.
3114 LAKE ST., OGDENSBURG, N.Y. . . IN CANADA, OTTAWA, ONT.

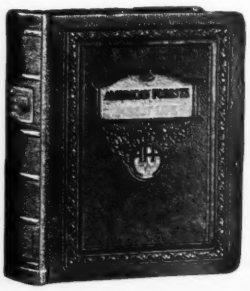
For a Limited Period

The American Forestry Association will offer the articles listed below to those who will devote a few moments of their time to the work of securing new members.

Simply send in the name and address of each new member secured together with four dollars, the regular yearly membership dues, to the American Forestry Association, which includes, without additional cost to such member, a year's subscription to AMERICAN FORESTS.

Select the prize you desire and it will be sent you postpaid. Three new members at the usual rate will bring all three prizes.

BINDERS



This two-tone embossed, hand-colored, gold stamped, durable, waterproofed binder holds 12 issues of AMERICAN FORESTS

It preserves your magazines and makes them a permanent volume without the use of glue or punching.

This Binder sells at $2.50 net, regardless of number.

Yours absolutely free for ONE New Membership at $1.00.

TIMBER SCALE STICKS

For Scaling Logs and Estimating Timber for Timberland Owners

Farmers, Foresters, Boy Scouts, Four H Club Members, Students

With these sticks it is possible to estimate the contents of standing trees and the amount of lumber in board feet in logs of various diameters and lengths.

Two sticks make up this set. The LOG SCALE STICK used in scaling logs and the TREE SCALE STICK for determining the board feet in standing timber.

Each set of sticks comes in a case and an instruction book explains their use.

Here is something no timberland or woodlot owner should be without.

Yours for one NEW Member at $4.00.

EMBLEMS

Wear Your Emblem

This emblem is not to be confused with the cheap buttons sometimes offered.

It is designed and manufactured by one of the largest emblem manufacturers in the world.

Octagon in shape. Green enameled on 14k gold. The tree is modeled in gold while the lettering is inlaid in a deep green.

Either pin or button type may be had.

Something any member may be proud to wear.

Yours for one NEW Member at $4.00.

Address all correspondence to

MEMBERSHIP DEPARTMENT

American Forestry Association

1727 K Street N. W. Washington, D. C.

Taxes and Timber Cutting Follow Vicious Circle on West Coast

Increased taxes on Washington and Oregon timberlands followed by more rapid cutting of the standing timber and that again by increased taxes is the story revealed in the fourteenth progress report of the Forest Taxation Inquiry by R. C. Hall. This part of the study being conducted by the Forest Service under authorization of the Clarke-McNary Act represents a compilation of data gathered from seventy timber owning corporations and individuals in Washington and Oregon.

Although the studies show that timber properties in these two states are admittedly under assessed, there is a distinctly upward trend. At present the assessed values of timberland acreage on the west side of the Cascade Mountain Range is much higher than on the east side. This is accounted for by the denser stands of timber on the west side. Taxes in the west side counties of Oregon averaged 2.5 cents per thousand board feet in 1927; and 3.9 cents per thousand board feet in the west side counties of Washington. In contrast the forests in the east side counties of Oregon were taxed an average of 2.2 cents per thousand board feet, and those of eastern Washington 3.2 cents. Individual instances were noted where the tax was 8.7 cents per thousand feet. In general the taxes were inclined to be highest in the counties most heavily cut-over, and where the smallest amounts of cut-over land have gone into agricultural use.

One may conclude from the tables and accompanying report that while property taxes constitute a heavy burden they are substantially less than the depreciation charges. Moreover, while property taxes are less than federal taxes in the east side counties, they are greater in the west side counties.

Louis J. Flanigan Appointed

Louis J. Flanigan has been appointed to the newly created position of executive assistant in the Conservation Department of New York. Mr. Flanigan will be Chief of the Division of Finance in the Department, having supervision over the Audit and Purchase Bureaus and the Cashier's Office.

The new official comes to the Department by transfer from the office of the Comptroller of the State of New York, where he has been acting chief of the Canal Bureau.

John L. Kaul Killed in Fall

John L. Kaul, former president of the National Lumber Manufacturers Association and vice-president of The American Forestry Association and president of the Kaul Lumber Company, fell to his death September 8 from a window on the fourteenth floor of an Atlantic City hotel. Mr. Kaul had been in ill health for some time and it is believed that a heart attack preceded the fatal fall.

With Mr. Kaul at the time were two brothers and Mrs. Kaul. The party had been visiting the shore resort for the past week or ten days.

For years a powerful and progressive factor in the lumber industry, Mr. Kaul will be particularly remembered for his service as president of the National Lumber Manufacturers Association during the 1927-28 term, at which time he inaugurated the national trade extension program. His services to the Southern Pine Association will also be vividly recalled.

Baltimore Scout Wins American Forestry Association Medal

Richard Hamburger, a Boy Scout of Troop 147, Baltimore, won The American Forestry Association medal in a poster contest conducted by the Maryland Department of Forestry. His troop takes the large plaque from Troop 334 of Annapolis and will hold it until the completion of next year's contest. The contest was open to all Boy Scouts in Maryland.

Richard Hamburger

Scout Hamburger's poster shows a mountain scene with a house and trees silhouetted against a red sky. A great hand reaches out as if to crush the house and trees, and beneath is the slogan "Be Thrifty, Save Your Forests."

This is the second year of the Maryland contest for The American Forestry Association medal, and Assistant State Forester Karl E. Pfeiffer reports a growing interest. All of the posters submitted in the contest were fourteen inches wide and twenty-two inches high, made in two colors with white, and combined with only a few words or a short slogan.

The judges were Edward Tunis, an artist of Baltimore, and Gordon T. Backus, of the Washington office of the United States Forest Service. Their decision was based upon originality, visibility, appeal, the slogan or message and the impression created by the poster.

New York to Restock State Covers

Plans for the artificial propagation of native quail on an extensive scale to restock the covers of the state have been matured by the New York Conservation Department.

Under the direction of William C. Adams, Chief of the Division of Fish and Game of the Department, the State game farm at Mjddle Island, Long Island, heretofore used for the propagation of pheasants by what is known as the range system in which common hens are used for hatching and brooding the pheasants, is to be converted into an incubator-brooder plant for propagating both quail and pheasants, with special emphasis on the production of quail. The entire brood stock of about 600 adult pheasants now at the farm is to be liberated on Long Island. Mr. Adams explained that the establishment of the incubator-brooder farm on Long Island represents the second step taken by the Department this year in a determined effort to bring back the bobwhite, once one of the most important game birds of the state, to its former abundance. The first step was the purchase from a Virginia breeder of his entire surplus of more than 3,000 birds, and these are being liberated in selected localities where they will be closely watched and cared for throughout the winter. A portion of them have been distributed to State Parks, which are protected as game refuges, and others have been placed in localities where there is no open season for quail.

The quail liberated this year are all of the variety native to the state and all are vigorous individuals. They were reared by the incubator-brooder system.

RED PINE

(Pinus Resinosa—Norway Pine)

This is the one ideal evergreen for Eastern United States. It will thrive in almost any soil or exposure. It is practically free from insect pests. It is one of the two or three quickest growing evergreens hardy in this climate. A beautiful tree and with valuable timber.

18 to 30 inches — twice transplanted, $22.50 per 100; $160 per 1000 (250 at 1000 rate).

Red Pine 8 Feet High

These are bargain prices—only 11,000 trees offered. New England grown.

FOR the average planter, why waste four or five years watching seedlings grow up the first foot of height? It pays dividends in satisfaction to buy oversize transplanted evergreens. We make a specialty of them at reasonable prices. Write for our list of sizes and varieties. You will find millions of evergreens listed, from seedlings to large trees. Here are a few:

	(100)	(1000)
American Hemlock Fine bushy little specimens, twice transplanted, 12 to 15 inches	$50.00	$450.00
Englemann Spruce Colors from green to frosty blue; an unusual and hardy Spruce; shapely, 9 to 12 inches....	$25.00	$200.00

KELSEY NURSERY SERVICE

Fifty Church Street, New York City

Get that book of Mrs. Parson's on "Trees in Winter." You will find it a revelation. Take time to help the kiddies get interested.

You Are to Blame, Not Your Kiddies

Being Just-So Tale Number Six

Took some 20 kids for a walk over the hills one Saturday last fall, after the leaves had dropped. Not one of them could tell the trees by their bark and branch formation. We saw 28 different kinds. Only four lads spotted so few as five right.

Now that's all wrong. Who is to blame? Can't expect the schools to tell your children the everyday things you ought to be telling them yourself.

This fall am going to stage a party and tote those 20 kids and a lot more, through our 300 acres, and see if we can't start their knowledge young, when the trees are young.

Which statement may or may not, remind you of our 300 acres of evergreens and deciduous stock. Leastwise that may have been part of the honest intent.

F. & F. Nurseries
FLEMER HOLDING CORP.
SPRINGFIELD NEW JERSEY

RHODODENDRONS, Natives, 1 to 6 feet
Maximum
Catawbiense
Carolinianum
KALMIA Latifolia (Mountain Laurel) 1 to 4 feet
Azaleas, several varieties
Write for price list
The Morris Nursery Company
47 West 34th Street, New York, N. Y.
Established 1849

A·E WOHLERT The GARDEN NURSERIES Narberth Pa.

Japanese Flowering Cherries, Flowering Apples and Chinese Magnolias

America's finest collection of Flowering Trees in all varieties
Send for Free Book
A. E. WOHLERT
930 Montgomery Ave., Penn Valley
NARBERTH, PENNA.

Fishing Trip For Prize Winner

A week's fishing trip in Maine, with all expenses paid, is offered to the person who submits the best 30-word description of Maine's appeal to the sportsman in response to the radio programs now being broadcast from Station W. L. W., Cincinnati, under the auspices of the Maine Development Commission, announces that Commission.

The series of broadcasts, entitled "Pine Tree Tales," depicts the attractions for sportsmen and sportswomen and the autumn glories of the Pine Tree State. Interwoven in the brief dramatizations are ancient ballads of Maine and thrilling historic narratives, adapted from Arundel, a story of Benedict Arnold's expedition to Quebec as told by Kenneth Roberts.

Big Deer Bags Hunter

When a deer hunts a man, Anton Pederson claims it's time to carry a gun. Pederson was working on his farm near Maple Hill, Minnesota, when a noise in the woods behind him startled him. He paid no attention and went on working. Again he heard the noise and turned just in time to dodge behind a stump and escape a huge buck that charged him. Round and round the stump the buck chased Pederson until help finally came from the farmhouse.

English Arboricultural Society Would Change Name to "Forestry"

At the annual meeting of the Royal English Arboricultural Society early in September it was proposed that the society's name be changed to one embracing the word "Forestry" instead of "Arboricultural." The council, as a body, it was said, thought it advisable not to express an opinion on the proposed change. Two-thirds of the members, it was stated, must decide on the change before it becomes effective.

TO A NIGHT-BLOOMING CEREUS

By Isabel Likens Gates

Rare flower, blooming for a night.
Charming with thy beauty all who see.
Too fair for earth, ethereal.
In ecstasy I gaze and bend the knee
In adoration, praising God for thee.

NORTH AMERICAN WILD FLOWERS

The shyness and Puritanical simplicity of our native Ferns and Wild Flowers endear them to all. More than ever before, our folks are turning to these plants which typify true "hominess" in a way that the gaudy immigrant flowers can never do.

For several years we have worked to find better methods of propagating and cultivating our native wild flowers. W have had many successes and some failures, but if one can find the reasons for failures, it is of as much value as to find the reasons for successes.

OUR SPECIAL OFFERS

for Fall, 1931—good until November first. Any one collection for $10.00 or half a collection for $5.50, or any six collections of your choice for $50.00.

COLLECTION A—For the Bog Garden: 12 Marshmarigold, $1.50. 12 Turtlehead, $1.50. 12 False-Dragonhead, $2.00. 12 Pitcherplant, $2.00. 12 Swamp Saxifrage, $2.00. 12 Tall Meadowrue, $1.75. 12 American False-Hellebore, $2.00.—84 Plants, Regular Price $12.75.

COLLECTION B—Woodland Ferns: 12 Maidenhair Fern, $2.00. 12 Lady Fern, $1.50. 12 Evergreen Woodfern, $1.75. 12 Christmas Fern, $2.00. 12 Berry Bladderfern, $2.00. 12 Hayscented Fern, $1.50. 12 Silvery Spleenwort, $2.50—84 Plants, Regular Price $13.25.

MOUNTAIN SAXIFRAGE

COLLECTION C—For the Open Sun: 12 Butterflyweed, $2.00. 12 White Wild-Indigo, $2.00. 12 Kansas Gayfeather, $2.00. 12 Bulbous Buttercup, $1.50. 12 Beardtongue, $2.00. 12 Maiden Pink, $1.50. 12 Euphorbia, $1.50.—84 Plants, Regular Price $12.50.

BLOODROOT

COLLECTION D—For the Shaded Rock: 12 Canada Violet, $1.75. 12 Foamflower, $1.75. 12 Mountain Saxifrage, $1.75. 12 Bloodroot, $2.00. 12 Iris Cristata, $2.00. 12 Hepatica Autiloba, $1.75. 12 Bluebells of Scotland, $2.00.—84 Plants, Regular Price $13.00.

COLLECTION E—For the Woodland Pathway: 12 White Baneberry, $2.00. 12 Plumy Bleedingheart, $2.00. 12 Blind Gentian, $2.00. 12 Virginia Cowslip, $1.50. 12 Phlox Divaricata, $1.75. 12 Solomonseal, $2.00. 12 Snow Trillium, $1.50.—84 Plants, Regular Price $12.75.

These Collections Represent 35 Varieties

of our native plants. We have about 275 more kinds which we have offered in our new catalog. If you do not care for the whole collection, any of the above plants may be ordered at prices listed. And don't forget that we have a regular catalog of all the popular kinds of Evergreens, Shrubs, Vines, Perennials and Shade Trees. Either catalog will be sent on request.

GEORGE D. AIKEN
Box H, Putney, Vermont
"Grown in Vermont, It's Hardy"

Georgia Vocational Forestry Camp

A vocational forestry camp concluded a three-weeks' session at Young Harris College in the mountains of Georgia on August 15. Eighty-seven enrolled in this the first camp of its kind ever held in this country. Those eligible to attend were connected with the vocational agricultural high schools of the state, which have forestry projects including a school forest, and had won the right to attend camp by excelling in a competitive examination. The Georgia Forest Service originated the forestry high school project and the vocational camp.

The summer camp at Young Harris College is located among the highest mountains of Georgia and in the great hardwood section of the state. The work undertaken dealt with fundamentals of tree identification, silviculture, forest management, plane surveying, mensuration and the uses of woods. The whole idea was to present in simple manner the practical phases of forestry, such as every farmer should know. Much of the work was carried on out in the woods.

In addition to work at Young Harris, the students were taken on study trips to the Appalachian Forest Experiment Station and the Biltmore forests at Asheville, the paper mill of the Champion Fiber Company, Canton, North Carolina, to veneer and lumber plants and to the Great Smoky Mountain National Park.

During the camp session a $100 prize was given to the vocational agriculture teacher who did outstanding work in forestry during the 1930-31 school year. This was won by W. B. Bates, Nashville, Georgia, the prize being given by the Georgia Forestry Association.

NURSERIES

"It Isn't a Home Until It Is Planted"

Trees for Forest Planting

PINE ⁘ SPRUCE

Firs, Arborvitaes and Other Conifers. We raise all our trees in our own nurseries

KEENE FORESTRY ASSOCIATES
KEENE, NEW HAMPSHIRE

Nut Trees

"Dual-Purpose Trees"

Plant grafted nut trees for early bearing and fine quality nuts. Enjoy their shade in summer and the nuts during the winter months. Catalog free on request.

(40 years growing nut trees)

J. F. JONES NURSERIES
P. O. BOX F 356 LANCASTER, PA.

Extra large—FRUIT TREES—*Extra old*
Trees Fully 4 Years Old—7 to 9 Feet Tall
SPLENDIDLY ROOTED — HANDSOMELY BRANCHED
APPLES — PEARS — CHERRIES — PLUMS
Plant them this fall

AND SOLD UNDER THIS GUARANTEE
If upon receipt of shipment you find that they are not the largest and finest Fruit Trees you have ever received from any nursery just repack and return freight collect and your money will be promptly refunded.

Our free catalogue describing the entire stock of Glenwood Nursery will be mailed free upon request.

Glen Bros., Inc. -:- Glenwood Nursery
1762-1772 Main St., Rochester, N. Y.
In Rochester over 60 years—on Main Street
Over 30 Years
"We Furnish the Home-Outdoors."

BRISTOL'S TREES
Northern-grown, Hardy Evergreens
Forest and Ornamental Stock
especially Red Pine
H. R. BRISTOL, Plattsburg, N. Y.

GENTIANA SINO-ORNATA
Sensational Thibetan Alpine
50 strong plants, $6.00; 100 for $11.00; 500 for $45.00.
Exquisite colour photograph, 15 cents.
Also rare Alpine Seeds, 2000 varieties—Lists free.
Remit International Money Order.
Rev. A. F. ANDERSON, F. R. H. S.
Glenn Hall, Leicester, England.

---

50 Little Evergreen Trees, $5.00
Pine, Spruce, Fir, Arborvitæ, Jap. Cypress, 10 each, 4-5 yrs. old, 6-12 inches (exp. collect). Our catalog "Little Evergreen Trees" is different. It offers tree seed, seedlings, transplants & specimen evergreens. For owners, gardeners and superintendents of country homes. Glad to send you your copy.
CONNECTICUT FORESTRY NURSERIES,
Deep River, Conn.

Boxwood, Rhododendrons, Kalmia Latifolia and Azaleas
in quantities. Also complete nursery stock
Write for catalogue
BLUE RIDGE PARK NURSERIES, INC.
Gainesville, Georgia

Fall Planting

Planting time is determined by the condition of the stock to be planted. As long as the plants are dormant they may be safely transplanted.

Stock planted in the fall has an opportunity to establish its roots before cold weather and starts growing in the spring before spring planted stock overcomes the setback of transplanting.

Order your stock for fall planting now, requesting the nursery to ship it at the proper planting time for your locality.

FRANKLIN FORESTRY CO.
Nurseries at
Colrain and Sudbury, Mass.
FOREST NURSERY STOCK
CONTRACT FOREST PLANTING
89 STATE STREET
BOSTON MASS.

KELSEY NURSERY SERVICE

(See our Advertisements on Page 629)

CAMELLIA JAPONICAS
Azaleas, Pink Dogwood, Crape Myrtle and other select plants.
Write for free illustrated catalog.
FRUITLAND NURSERIES
AUGUSTA, GA.

GROW TREES FROM SEEDS
Send for catalogue of tree, shrub, perennial, palm, fruit and evergreen seeds
CONYERS B. FLEU, JR.
Germantown Philadelphia, Pa.

EVERGREENS
FOR ALL PURPOSES
Price List Sent on Request
The North-Eastern Forestry Co.
CHESHIRE CONN.

Evergreen Nursery Stock For All Purposes
Pine, Spruce, Fir, Cedar
Our stock is thrifty and sturdy
CENTRAL MAINE FOREST NURSERY
SKOWHEGAN, MAINE

NARCISSUS BULBS
50 FINE VARIETIES TO NAME
Send for Catalogue
Fine mixture for naturalizing and for garden planting, many varieties and types, good hard bulbs. $3.00 per 100, $27.00 per 1000, 25 for $1.00, delivered.
ORONOGO FLOWER GARDENS
Carterville, Mo.

ORCHIDS
Species and Hybrids in great variety. Write for special lists of Established Orchids.
LAGER & HURRELL
Orchid Growers Summit, N. J.

Rhododendron Species
We offer a number of the newer Chinese and other species to those interested. Send for list which also contains other items not generally offered.
JOS. B. GABLE, Stewartstown, Pa.

Send for The Book of HILL'S EVERGREENS
Latest, most complete catalog. Shows various artistic planting plans for your home. Choice of every variety. Over 100 pictures—50 in full color. Enclose 25c for book—refunded on first order.
D. HILL NURSERY CO. Evergreen Specialists
Largest Growers in America
Box 501 Dundee, Ill.

EVERGREEN TREES
FOR FOREST PLANTING
CERTIFIED White Pine, free from blister rust; Norway and White Spruce, Scotch and Red Pine and other varieties. Know our reasonable prices. Get our figures on Contract Planting.
Western Maine Forest Nursery
Dept. A 10, Fryeburg, Maine

Plant material for Landscape, Horticultural and Forestry Projects. Choice line of
Strong Perennial Plants, Trees, Shrubs, Vines and Evergreens, Lining Out Stock, Native Plant Material
Catalog Upon Request
Long Distance, Naperville No. 1
NAPERVILLE NURSERIES
Naperville, Illinois

Yale School of Forestry

Established in 1900

A graduate department of Yale University, offering a two years' technical course in forestry leading to the degree of Master of Forestry.

Special opportunities are provided for advanced work and research in the laboratories and the school forests.

For further information and catalog address

The Dean *of the* School *of* Forestry

New Haven, Conn., U. S. A.

University of Maine

Orono, Maine

The Forestry Department offers a four-years' undergraduate curriculum, leading to the degree of Bachelor of Science in Forestry.

Opportunities for full technical training and for specializing in forestry problems of the northeastern States and Canada.

Eight-weeks' camp course required of all Seniors in Forestry, in practical logging operations, in northern Maine, under faculty supervision.

For catalog and further information address

JOHN M. BRISCOE
PROFESSOR OF FORESTRY

Harvard Forest

Petersham
Massachusetts

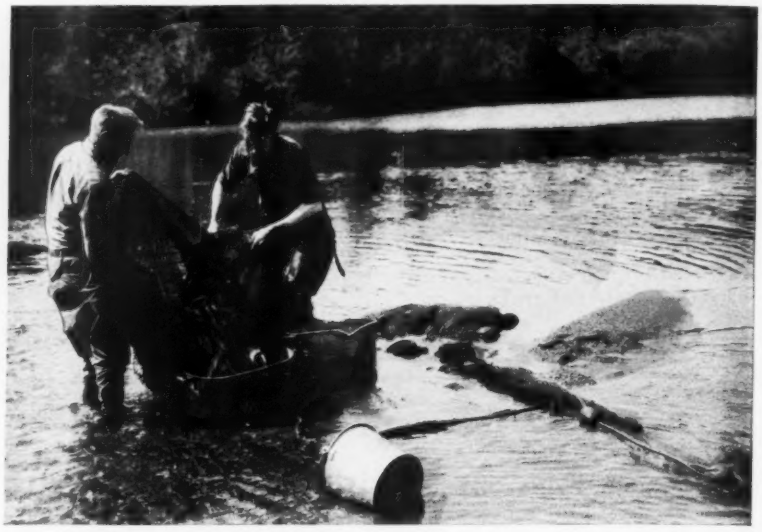
A forest experiment station of two thousand acres, twenty-three years under management on a sustained yield. Many phases of regional silviculture now highly developed. Logging, milling, and marketing annually carried on. Besides participating in the handling of the Forest, students conduct research projects in collaboration with the staff. Competent graduates accepted as candidates for the degree of M. F. or D. S.

RICHARD T. FISHER
Director

A BROOK TROUT STATION IN THE WHITE MOUNTAIN NATIONAL FOREST

By A. H. DINSMORE

THE York Pond Fisheries Station in New Hampshire, was established for the purpose of obtaining for the various stations of the Bureau of Fisheries, a supply of brook-trout eggs from wild and semi-wild fish.



Collecting spawning trout at the York Pond Fisheries Station.

To make adequate preparation for the increasing demands of the future, it was, of course, important to select a locality where there would be little limit on future expansion. Fortunately, in the White Mountain National Forest, the Government already owned vast areas containing some of the finest trout waters in the country.

Through the interest and cooperation of J. J. Fritz, formerly supervisor of the forest, the region in the vicinity of York Pond lying in the townships of Berlin and Kilkenny was selected. A blanket-use permit, fully covering the development work necessary, was issued by the Forest Service to the Bureau of Fisheries, and through the cooperation of the New Hampshire Department of Fisheries and Game, the entire watershed of the West Branch of the Ammonoosuc River, which included about 10,000 acres of forest, York Pond, and twenty-five miles of streams were closed to fishermen and reserved for the purpose of the bureau.

From the foregoing it will be seen that York Pond Station is engaged in a special class of work, the production of brook-trout eggs, mainly for other hatcheries, and not in the production of fish for distribution. Its hatchery, however, a very subordinate factor in its development, will be utilized for producing much of the brood stock of the station, and also in raising trout for local distribution. During the recent past, from 50,000 to 75,000 brook trout from this hatchery have been planted in the public waters of the main Ammonoosuc River each year. Several hundred thousand fry and fingerlings are produced for public waters of northern New Hampshire and Vermont, and many large surplus male trout are planted in suitable local waters.

Active operations were begun in the summer of 1920. During the period from 1920 to 1930, the development work continued as rapidly as available funds would permit. At the end of that period there had been constructed a cement dam, powerhouse, feed mill and carpenter shop at the outlet of York Pond; a diversion dam with a half mile of canal, turning Cold Brook, which naturally joins the outlet of York Pond over the intervening ridges, through two large artificial ponds and into York Pond; retaining and handling races for brood fish; and rearing races and ponds for growing fish, and two crude but serviceable hatcheries with an eyeing capacity of six million eggs.

Early in July, 1930, a special appropriation was provided for the further development of the station and there are now under process of construction suitable permanent concrete block buildings for the purposes of the station.

There is also under construction a large canal which will eventually bring all the waters of the West Branch through York Pond, with many acres of artificial pond development on the way. In diverting this stream, it has been possible to take advantage of the valley of a small tributary stream, falling less rapidly than the main stream. Thus, near the head of the small valley, which is lowest at this point, the two streams lie so close together that a slight excavation only 300 feet in length will bring the large stream to the small valley. By flooding the valley just above the mouth of the stream, a large control pond has been secured, having about a thirty-foot elevation above the bed of the stream. From this point a large canal has been excavated along the hillside to a cut in the old railway, bringing the water over the divide to York Pond. Under this canal are many natural pond bottoms which will be flooded.

An extensive pond system will thus be provided for growing and retaining brood trout. Where trout are carried intensively year after year diseases occur with more or less frequency, often causing serious losses. Not only will it be possible here to handle the fish under conditions more nearly approaching the wild state than at the usual fish-cultural establishment, but it is expected eventually to operate the brood ponds in rotation, giving each pond a full year's rest at frequent intervals.

Moreover, by selection of the fittest, a su-

perior strain of stock is being rapidly developed. From any given lot of trout eggs from a common source, fish are produced which show a tremendous difference in their vigor and rate of growth. Starting with 300,000 or more fry each spring, only the very finest fish are retained at culling time in autumn for breeding purposes. While such selection will be continued to future generations, already the offspring of our first selections are showing remarkable uniformity in development, as compared with the offspring of either wild or unselected stock.

As an indication of the production already attained, there were taken during the spawning season of 1930 approximately seven million eggs. Fish have been distributed up to May of the present year as follows: Fry, 320,730; fingerlings, 335,700; adults, 1,312. In addition to these there are being fed at this time, along with the large stock of brood fish, a quarter of a million fingerlings from which further selections will be made next month.

While the fish cultural work at present is confined to the immediate vicinity of York Pond, there are many other sections of the area which afford the finest opportunity for an extension of the work, as the demand for an increased supply of eggs may make this desirable.

Natural History Taught New York Boys and Girls in Harriman Camps

Education in natural history and in ideas of conservation of wild life, forms an important part of the summer program of camping for the thousands of young folks from the metropolitan district who enjoy vacations in Harriman Section of the Palisades Interstate Park, in the Highlands of the Hudson. This education is centered in the five regional nature museums, located to suit the convenience of the various divisions of the camping areas. It receives assistance in many forms from the Trailside Museum at Bear Mountain, conducted by the American Museum of Natural History of New York City. A considerable proportion of the sixty thousand campers who enjoy two or more weeks stay in the park camps, participates in this nature education, says the Palisades Interstate Park Commission.

It has been found that an increasing degree of interest is manifested yearly in this feature of the service of the camping department, and larger numbers of campers visit the regional museums for lectures and demonstrations, join nature hikes, and enter the competitions for museum emblems. A gratifying percentage of the young people show proficiency in these competitions. Last year, 888 campers received the minor museum emblem, for minimum requirements; eighty-eight received the major museum emblem, requiring four minor "M's"; twenty-six were awarded the Museum Badge, and two received the golden emblem given to a camper or counsellor, having won two or more bars for additional work on a major emblem, and having taught other campers satisfactorily. Such persons may be recommended for the position of nature counsellor in a camp.

The requirements for a minor museum emblem are such as involve painstaking study of some phase of natural history and accomplishments in some one field that are beyond the average knowledge among older persons in such fields. Winning of such an emblem implies a foundation of knowledge in some one division of the science that may carry the boy or girl further in later studies and give a wholesome and satisfying trend to his or her mental life.

The emblem calls for any one of the following subjects: ferns, wild flowers, trees, fungi, amphibians, rocks and minerals, birds, weather study, astronomy, insects, soil study and mammal observations. Protection of wild life is one of the first lessons taught.

Illick Heads Department at Syracuse

Dr. Joseph S. Illick, former State Forester of Pennsylvania, has been appointed head of the Department of Forest Management of the New York State College of Forestry at Syracuse University.

Dr. Illick is a native of Easton, Pennsylvania, and was graduated from Lafayette College in 1907, and the Biltmore Forest School in 1911. After completing his regular college courses he did graduate work at the University of Chicago and at the Forest School of the University of Munich, in Germany.

In 1907 Dr. Illick became a member of the faculty of the Pennsylvania State Forest School at Mont Alto, and served as acting director during 1918-1919. He was then appointed

Joseph S. Illick

chief of the Bureau of Silviculture in the Pennsylvania Department of Forestry. Later he served as director of Forest Research and from 1927 to 1931 was State Forester of Pennsylvania. Among the outstanding achievements during his administration were a greatly enlarged and coordinated road and trail development program on the state forests, and the creation of the Pennsylvania Forest Research Institute at Mont Alto.

In 1926 Dr. Illick was an official delegate to the World Forestry Congress in Rome, Italy. After the Congress he made an extensive study tour of twelve European countries, including practically all countries with important forestry organizations from Italy to Lapland. In the study of forest conditions in the latter country he traveled more than 150 miles north of the Arctic Circle.

Mason Named Western Pine Manager

David T. Mason, of Portland, Oregon, has been named manager of the new Western Pine Association. Mr. Mason is senior member of the consulting forest engineering firm of Mason and Stevens. He was formerly in charge of the timber valuation section of the United States Bureau of Internal Revenue, professor of forestry at the University of California and was connected with the United States Forest Service in Montana.

Selection of a manager and details pertaining to organization policies and activities were the principal matters considered at the first meeting of the association, recently created.

School of Forestry

University of Idaho

MOSCOW, IDAHO

Offers thorough training in Practical Forestry, preparing for Federal, State, and private work.

Four and Five Year Courses, leading to the degrees of Bachelor of Science in Forestry and Master of Science in Forestry respectively.

Opportunity is given to specialize in General Forestry, Logging, Engineering, and Range Management.

Large logging and milling operations, important wood - working industries, also extensive Federal, State, and private forests, near at hand. Excellent opportunity for summer employment.

For further particulars address

FRANCIS G. MILLER, *Dean*

The New York State College of Forestry

Syracuse University
Syracuse, N. Y.

UNDERGRADUATE courses of four years are offered in forestry leading to the degree of Bachelor of Science. Graduate courses are also offered in several branches of forestry leading to advanced degrees.

The College owns and controls approximately 6700 acres of Experimental Forest Lands in various sections of the State. These forest lands together with the Roosevelt Wild Life Experiment Station at Syracuse, offer excellent opportunities for practical work in forestry.

Experimental equipment for instruction in pulp and paper making, in kiln-drying and timber treating and a portable sawmill are features of the complete equipment of the College.

Catalog will be sent upon request

HUGH P. BAKER, *Dean*

The Rich Forest-Fire Fighting Tool

The best and only Patented Forest-Fire fighter made. Sold by the thousand—proves its merit.

NOTICE TO PURCHASERS

This tool is protected by U. S. and Canadian Patents. Persons making, using, or selling infringing tools will be prosecuted.

C. H. RICH **Woolrich, Pa.**

Gift Enclosure Cards of Wood

Twelve unique cards made of twelve different woods, decorated with original appropriate designs. No thicker than the usual card, flexible, fascinating, almost transparent

Sent postpaid for $1.00

B. L. MADDEN LOWVILLE, N. Y.

Brazilian Walnut Infects Woodworkers

A number of woodworkers who have come in contact with "Brazilian walnut" lumber have suffered from inflammation of the skin, which, in some instances, was "very severe," according to the United States Public Health Service.

Letters from various firms received by the Service indicate that skin infection has been reported in various instances where this wood has been used and that one of the firms has discontinued the use of this lumber because of its effect on workers.

In a cabinetmaking plant employing about one hundred men there developed suddenly, early in February, a number of cases of dermatitis of the exposed parts. These cases occurred while the men were working on an order calling for the use of Brazilian walnut, the wood for which was purchased January 28, 1931.

Cases continued to develop until a total of eleven had occurred. The symptoms varied in severity from a slight erythema and a few scattered papules and vesicles on the exposed parts to a very severe inflammation of the hands, forearms, entire face, and neck, accompanied by erythema, vesiculation, and edema severe enough to close the eyes.

The disease affected mostly those who came in contact with the sawdust and those who sandpapered the wood. Inquiry among the workers also showed that there were many who, while they did not develop a dermatitis, did develop a coryza and sneezing while working in the room where the wood was being used.

The length of time elapsing between the exposure to the wood and the development of the symptoms varied from two days to two weeks. The symptoms first noticed were a burning and itching of the face and eyelids, and in some cases the dermatitis was limited to these parts. In others it spread to the hands, forearms, neck, and other exposed parts.

Most of the men who were affected continued working with the wood, and some of them had completely recovered from their symptoms within a few weeks. It seems, therefore, that a tolerance to the wood can be developed by some susceptible individuals if the exposure is continued.

The importer from whom the wood was purchased furnished a list of firms to whom he had sold the wood. Letters were written to these firms inquiring as to whether any cases of dermatitis had occurred in their plants while they were using the Brazilian walnut. Answers were received from ten firms and nine of them replied that they had had cases of dermatitis among their workers which seemed attributable to the Brazilian walnut.

The importer stated that while he was contemplating the importation of the wood, he had a laboratory investigate the possibility of danger in using it.

Leaves from the tree, preserved in alcohol, were shipped to him from Brazil, and an extract was obtained from these leaves for inoculation of susceptible workmen in order to make them immune to the poison from the wood.

TREE SEEDS FROM 1931 CROP

Certified as to origin and species

We collect all conifers of Gulf Coast, Rocky Mountains, British Columbia and Alaska

Site and climatological data for climate types

The Long-Bell Lumber Company

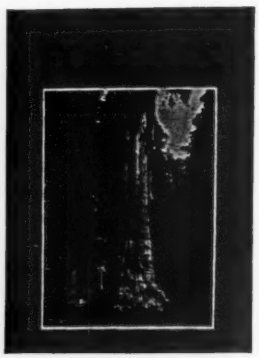
LONGVIEW, WASHINGTON

P. G. Thomson Dies

Peter G. Thomson, president of the Champion Coated Paper Company, Hamilton, Ohio, died recently at Cincinnati at the age of eighty. Mr. Thomson, who started his business career with a bookstore, founded the Champion Coated Paper Company in 1892. In 1906 he also founded the Champion Fibre Company at Canton, North Carolina.

NOMINATE YOUR FRIENDS FOR MEMBERSHIP

Fill in the last line and mail the application to a friend. He will appreciate the courtesy.



American Forests is sent monthly to all except Annual Members

Application for Membership in The American Forestry Association

Date.....

The AMERICAN FORESTRY ASSOCIATION,
1727 K Street N. W., WASHINGTON, D. C.:

I hereby apply for membership in The American Forestry Association and enclose $.....

INDICATE CLASS OF MEMBERSHIP DESIRED

☐ Subscribing membership, per year, including Magazine	$4.00
☐ Contributing Membership, per year, including Magazine	10.00
☐ Sustaining Membership, per year, including Magazine	25.00
☐ Life Membership (no other dues for life), including Magazine	100.00
☐ Patron Membership (no other dues for life), including Magazine	1,000.00
☐ Annual Membership, without Magazine	1.00

Canadian Postage 25c extra, Foreign 50c extra, on Subscribing Memberships

PLEASE LETTER OR TYPE NAME AND ADDRESS

Name.....
Street.....
City and State.....
Business or Profession.....
Nominated by.....

October, 1931

Smoky Mountain Land Plans Made

Plans for the formal presentation to the United States Government of park lands which will bring the Great Smoky Mountains National Park area to 300,000 acres were made September 14 at a joint meeting of the North Carolina and Tennessee Park Commissions at Asheville, North Carolina.

Governor Henry H. Horton, of Tennessee, and Governor O. Max Gardner, of North Carolina, will be asked to accompany the two commissions to Washington in October, when formal transfer will be made.

Colonel D. C. Chapman, of Knoxville, spokesman for the Tennessee Commission, said that on the Tennessee side of the park some difficulty was being experienced because of need for additional legislation to enable the commission to condemn certain tracts.

He expressed belief the commission would have approximately 70,000 acres for transfer to the Government at the October meeting in Washington.

North Carolina officials have already formally turned over to the Government 58,622 acres and have deeds ready to 80,001 acres additional. Numerous other tracts are expected to be ready for presentation by the October meeting.

Lodewick Goes to Pacific Northwest

Dr. J. Elton Lodewick, for the past several years professor of wood technology at the Virginia Polytechnic Institute, at Blacksburg, has taken charge of the forest products work of the Pacific Northwest Forest Experiment Station, at Portland, Oregon. The problems undertaken by the station are largely local and apply particularly to the activities on the National Forests of Region Six. They deal principally with logging and milling, and the work is closely coordinated with that conducted by the Forest Products Laboratory at Madison, Wisconsin.

Traffic of Visitors at National Parks Sets Record

The traffic of visitors at National Parks was five per cent heavier up to August 8 than during the comparable period of 1930, when an all-time attendance record was set at 2,774,561, according to the Department of Interior.

Early opening of several parks and the increased number of automobile tourists have been largely responsible, it was said, for the excellent showing this year. Lassen Volcanic Park, in California, reports a 118 per cent gain.

Total atendance was 2,010,868 up to August 8, the last date for which records are available. This figure represents an increase of 103,422 visitors over the total of 1,907,446 for the comparable 1930 period. Attendance data are not yet being recorded at Great Smoky Mountains Park, and figures for Mount McKinley Park, in Alaska, have not been received. The latter, however, always has a small total because of its isolation from population centers.

Of the remaining twenty parks, it was pointed out, thirteen show increased traffic over 1930 and seven have reported a loss. The only figures that have been received for National Monuments are from the Petrified Forest preserve, in Arizona, whose attendance of 73,661 was twelve percent behind 1930.

Next to Lassen, the largest gain was recorded by Hawaii Park, the number of visitors being fifty-eight per cent ahead of 1930.

Grand Teton, in Wyoming, has experienced a fifty-seven per cent increase, and General Grant a gain of twenty-two per cent.

Attendance at Bryce Canyon rose nineteen per cent; at Crater Lake, seven per cent; at Mesa Verde, fifteen per cent; at Mount Rainier, nine per cent; at Platt, five per cent; at Rocky Mountain, twelve per cent; at Sequoia, fifteen per cent; at Yosemite, three per cent; and at Zion, nine per cent.

The number of visitors at Yellowstone had fallen off three per cent from 1930. Wind Cave reported a fifteen per cent drop, Glacier a loss of fourteen per cent, Hot Springs thirteen per cent, Grand Canyon ten per cent, Acadia six per cent and Carlsbad Caverns five per cent.

Leaf Fall Saves Soil Washing

The blanket of leaves from one year's leaf fall in the forest may weigh more than a ton per acre, the United States Department of Agriculture says. Forest Service investigators find that a heavy litter is capable of holding vast amounts of water and slowing up the run-off which without the protecting blanket would quickly erode the soil of the woodlands.

In studying the protective value of leaf litter and the result of its removal by fire or other agency, Forest Service investigators found that the 1930 fall of dry leaves, gathered up on a half acre of pine-oak forest at the Bent Creek Experimental Forest near Asheville, North Carolina, weighed 1,300 pounds, oven-dry weight. Accumulated dry leaves and litter on the tract previous to the first clean-up weighed five and one-half tons to the acre, dry weight. From two to three years are required for decomposition of the litter, and a heavy blanket of leaves is thus normally present on the area.

Pennsylvania Hunting Grounds

Purchase has been made of 14,000 acres of game territory in the Mehoopany Creek section of Wyoming County, Pennsylvania, by the State Board of Game Commissions. This tract of land will be known as state game lands and will provide public hunting grounds for thousands of hunters in that vicinity. It is said that deer, bear and rabbits are abundant on these lands and that this territory is a natural habitat of ruffed grouse.

REGULATION

UNITED STATES
Forestry
Style
Uniforms

No guess work when you buy an outfit here—It will look right, fit right, wear right and—Be RIGHT—

RIGHT from start to finish.

Write for NEW Illustrated Catalog with Samples and Prices attached

Write for our Special Forest Service Suit Offering

SMITH-GRAY
740-4 Broadway New York

FALL DISCOUNTS ON
Bright Flowered and Berried Evergreens

We specialize on Holly, Rhododendron, Azaleas, Kalmia, Boxwood, and Ground-cover plants. Let us quote prices on Hemlocks, Arborvitæ, Firs, Nandinas, Abelia, Euonymus and other favorites. Quick estimates on choice hardy Flowering Trees and Shrubs.

HARDY EVERGREEN GARDENS
ROUTE 4 MARION, N. C.

THIS UNITED STATES FOREST RANGER USES THE BEST FIRE-FIGHTING EQUIPMENT HE CAN GET FOR THE JOB—A SMITH INDIAN

Why? Because it uses only clear water. Is easily and quickly refilled. Throws an unbroken, strong stream 50 feet. Write for folder describing our extinguishers.

D. B. SMITH & CO., 405 Main St., Utica, N. Y.
Pacific Coast Agents:
Fire Prot. Eng. Co., 369 Pine St.
San Francisco, Cal.
7451 Willoughby Ave., Los Angeles
Marion Bldg., Seattle

(Patented)

THE SMITH INDIAN FIRE PUMP

"Tank is Curved to Snugly Fit the Back and Pump Has No Leather Plunger to Give Trouble"

RIDING THE CHUCK LINE
By Theodore S. Woolsey, Jr.
A Forester in peace and war. Rubbing elbows with Indians. Cowboys, Mormons. An inside picture of the Far West. $1.50 paper; $2.00 cloth.
THE TUTTLE, MOREHOUSE & TAYLOR CO.,
New Haven, Conn.

Physical Properties of the Soil
By Bernard A. Keen
380 Pages
Illustrations and Diagrams
Price $8.00
Based upon his experience at the Rothamsted Experimental Station in England, Dr. Keen presents a critical survey of the present knowledge of the physical properties of soil.
Also
DALLIMORE & JACKSON'S
A Handbook of Coniferae
Price $16.00
Order Direct From
The American Forestry Association
1727 K Street Northwest
Washington, D. C.

Christmas Cards of Wood
Six unusual cards made of six different woods; flexible, fascinating, almost transparent. Delightful designs and greetings. Complete with envelopes, correspondence cards and an illustrated folder.
Sent postpaid for $1.00
B. L. MADDEN LOWVILLE, N. Y.

P. T. COOLIDGE
CONSULTING FORESTER
TIMBER ESTIMATES LOGGING PLANS
IMPROVEMENT OPERATIONS SURVEYS
31 Central Street
Norfolk Bangor, Maine Toronto

TIMBERLAND FACTORS
Since 1880
MANAGEMENT - ENGINEERING
JAMES D. LACEY & CO.
350 MADISON AVE.
NEW YORK
CHICAGO JACKSONVILLE SEATTLE
NEW ORLEANS MEMPHIS

Tree Surgery Supplies
Galv. Lag Screw Hooks, Woodscrew Bracing Rod, Nuts, Washers, Galv. Cable, Saws, etc.
"Sealtite" Tree-Wound Dressing
ROLLIN H. TABOR CO.
Mt. Vernon, Ohio

Book News and Reviews

BETTER TROUT STREAMS, by Edward R. Hewitt. Published by Charles Scribner's Sons, New York; 140 pages; illustrated. Price, $3.

A valuable addition to the library of anyone interested or engaged in the rearing or planting of trout. It deals in a masterful manner with the selection and maintenance of trout streams with special reference to trout habits and their food supply.

The author's fifty years of study on the subject has supplied him with unquestionable data which he presents in an interesting and convincing manner. Stream improvement, rather than stocking, tends toward better fishing, he says. The geological formation of watersheds influences the production and growth of trout through the ability of streams to furnish trout food, and the need of artificial dams to supply proper water levels and prevent the destruction of trout food by freshets.

Each natural trout food is described in line of its importance and supply. Fifty-six per cent of all foods consumed by trout was found to be of aquatic origin. Stream bottoms containing aquatic plants were found to be thirty-seven times richer in food than where this was not present.

When a trout gets its growth, and influencing factors during this period—which the author finds to be six years—are covered in detail. It takes five pounds of food to produce one pound of trout, and food, not age, determines weight. The age of a trout can be determined by the tail and by counting the rings on the scales placed under a microscope. The laboratory tests are explained in a clear and understandable manner.

Trout enemies are covered in detail. Twenty-one enemies are listed from the dragon-fly larvae and large fish down to Norway rats and house cats. Means of exterminating these enemies are discussed.

It is brought out that all water-supply reservoirs of British towns are used as public fishing resorts on the payment of a suitable fee under supervision of an employee of the authorities and the fees used to maintain this service and furnish an income, and the author states this practice could be carried on in the United States without influencing sanitary conditions. This would provide more fishing and the municipal governments would derive much revenue.—*W. C. M.*

Important Western Browse Plants, by William A. Dayton. Published by United States Department of Agriculture, Washington, D. C. —The economic value, distribution, and requirements of more than 500 of the more important browse plants on western range lands are described in this new booklet. The handbooks will be useful to stockmen, as well as to range administrators and scientists engaged in range research.

The United States Department of Agriculture at Washington, D. C., will send the booklet, *Important Western Browse Plants*, Miscellaneous Publication 101-M, on request, as long as the supply lasts.

The "*American Civic Annual*"—Vol. II, has been published by The American Civic Association, of Washington, D. C., and the price to the public is $3.00 a copy. Edited by Harlean James, Executive Secretary of that organization, it is an interesting presentment, giving a fair cross-section of civic achievements of the past year by towns, regions, states and in the nation. There is appended a valuable and useful list entitled "Who's Who in Civic Achievement" which covers briefly activities in this field of individual members of the American Civic Association.

A METHOD OF RECLAIMING SEVERELY WEEVILED WHITE PINE PLANTATIONS, by A. C. Cline, Assistant Director of the Harvard Forest, and H. J. MacAloney, of the United States Bureau of Entomology.—In many sections of New England the destructiveness of the white pine weevil is so great that the potential value of a great majority of plantations is lost, and the authors of this paper, a forester and an entomologist, have collaborated to find a practical means by which even a seriously damaged plantation may be improved to promise a fair and in some cases a considerable profit. It is published by the Massachusetts Forestry Association at Boston and is priced at twenty-five cents a copy.

IF I WERE TO MAKE A GARDEN, by Ernest H. Wilson. Published by The Stratford Company, Boston, Massachusetts. Price, $10.

In this, his last book, completed just before his tragic death, the late beloved "Chinese" Wilson's artistry reaches a superb height. While he tells how to "make a garden" and what to put in it in the most practical and informative way, one feels, on putting down this book, that he has been privileged to gaze on a wide and colorful canvas, upon which, with bold and certain strokes, a master has painted a garden. The love of color lay close to the heart of this man, and his book bespeaks this love, for it is color—color from its most delicate nuances to its most ardent, vivid hues that he uses with such good effect. Here he brings the aristocrats of all plants together to contribute to the perfect garden, and shows how they may be used to create even greater beauty. No matter whatever or wherever your dream garden may be —rock or water, woodland or most formal in nature—here you may learn with what plants and shrubs best to people it.

One of the greatest of plant explorers, having brought personally from the far corners of the earth rare foreign species, he has undoubtedly made the greatest contribution to the encyclopedic knowledge of plants of any modern. His name is written across books covering plant hunting, plant testing, plant selection and adaptation, and plant use. And this last work of "Chinese" Wilson—creator of garden loveliness—completes his cycle of garden classics.

Printed in large, clear type on a beautiful antique sheet, the text is embellished by inserts of many exquisite halftone illustrations. To those fortunate enough to posess it, this book will be a treasure indeed.—*L. M. C.*

RIDING THE CHUCK LINE, by Theodore S. Woolsey, Jr. Published by the author at New Haven, Connecticut; 116 pages. Price, $2.

"Early rising with the morning smell in the air just after sunrise; hunger and thirst and physical fatigue followed by food and drink and physical comforts; the intimate companionship of the West and the satisfaction of seeing a new service come into its own"—these stand out most vividly in the mind of Colonel Theodore S. Woolsey as he looks back on thirty years in the open.

After graduating from the Yale Forest School in 1903, the author was intimately associated with the Forest Service until 1917. Later he was with the headquarters staff of the A. E. F. in France. This combination affords a variety of experiences which are entertainingly related in "Riding the Chuck Line." Within the rather disconnected chapters one gets a picture of the West as Uncle Sam's foresters found it in the beginning of the 20th century, and learns why the Forest Service gained a nation-wide reputation for honesty and square dealing. Contrasting these experiences are intimate glimpses of the difficulties which faced the Americans when they landed in France in 1917 and bargained for French timber with which to fight the Allied cause.

Concerning French forests and forest methods, Colonel Woolsey writes that perhaps the greatest lesson that he learned is the way the sustained yield of managed forests may be made to give a regular annual income. With a glimpse of the forests of India and of Morocco and some intimate details of his experiences as a consulting forester in the United States, Colonel Woolsey rounds out a picture of some of the things which may befall an American forester. The book will refresh the memory of many foresters who have had similar experiences and will open up new views of a forester's life for those who are on the side lines.—G. H. C.

Game Survey of the North Central States, by Aldo Leopold. Published by the Sporting Arms and Ammunition Manufacturers' Institute. 299 pages; illustrated. Price $1, from American Game Association, Washington, D. C. The purpose of this survey (and report) is to appraise the chance for the practice of game management as a means of game restoration in the north central region. It attempts to describe game conditions as they exist, the opportunities which those conditions offer, the human machinery available for acting on them, and the possible consequences of their further neglect.

Establishing new lawns and rejuvenating old lawns with emphasis upon various fertilizers is briefly discussed in an eleven-page bulletin entitled *"Making the Home Lawn,"* by L. E. Langley. It is available free from the Agricultural Extension Division of the University of Minnesota, University Farm, St. Paul, Minnesota.

SOME FAMILIAR WILD FLOWERS, compiled by James Edmund Jones and Richard S. Cassels. Published by the MacMillan Company; 79 pages of pictures. Price $1.50.

A large number of the wild flowers of the Northeastern States and Canada are pictured and described in this handy little pocket manual. The flowers are arranged with regard to color, although the many photographs are reproduced in browns. Every effort is made to avoid the use of technical terms and to give brief interesting notes. It is a book for those who have no knowledge of botany but who wish to know the names of the flowers that border their paths.—*G. H. C.*

Experiments With Hedges, by Frank A. Waugh, professor of landscape architecture at Amherst.—Published as Bulletin No. 272, by the Massachusetts State College at Amherst, this is the report of experimental and demonstration work in the garden of the College in testing hedges for over a period of ten years. It is full of interesting and valuable information, for hedges are coming back into fashion, and the numerous illustrations bear out fully the findings, as set forth in the text.

FOREST MANAGEMENT, by H. H. Chapman, Professor of Forest Management, Yale University School of Forestry. Published by J. B. Lyon & Co., North Broadway, Albany, New York; 544 pages. Price $4.50.

This text on the subject of the management of forest property for the commercial production of timber crops is the result of twenty-five years of study and experience covering all the forested sections of the United States, including the Lake States, New England, the Southern pine region, the West Coast and the Rocky Mountain region. The author has developed the fundamental business principles which apply not only to forestry but to all forms of organized industry. To the owner and manager of forest lands, the book will form a manual of indispensable value. The treatment of forests intended for use for parks and recreation is clearly distinguished from that designed for the growing of wood crops. The economic relations of forests and their effect on forest management is shown in new and interesting ways. This publication is valuable alike to the forest owners, the lumbermen and the students of forestry, and by reading it the layman will get a comprehensive idea of the place of forest management in the welfare of the nation.

"Wood-Liquid Relations," by L. F. Hawley, published as Technical Bulletin No. 248 of the United States Department of Agriculture, and available from the Superintendent of Documents. Price, 10 cents.—A summary of the present knowledge of wood structure and the relations of liquids to wood. The facts presented serve as a basis for conclusions concerning the movement of water in wood during the drying process and also of impregnated liquids for the preservative treatment of timber.

Have you received a list of our

Newest Reduced Prices —on— Regulation Forestry Uniforms

Effective September 15th

The second price reduction in 1931!

Passing on to you the savings which we effect WITHOUT SACRIFICE OF QUALITY.

Write NOW for Your Price List and Samples!

The Fechheimer Bros. Co.

"America's Foremost Uniform Makers"

Cincinnati, Ohio

Forest Planting Pictured Step by Step

A four-page folder giving, by word and picture, the proper methods of handling forest plantings. Send stamped addressed envelope for your copy.

The American Forestry Association

1727 K St. N. W. Washington, D. C.

KISER'S PICTURES

"Nationally Known, Nationally Sold. Truthfully Typify All That Is Beautiful in the Wonderful Outdoors."

Hand-Colored in Oil in all sizes from 7 x 9 inches up.

FREEPOINTS

"The Poetry of the Country." Produced in Color Ready to Frame.

Subjects From These Two Distinctive Picture Lines Make the Most Exquisite Gifts. We Are Booking Holiday Orders *Now.*

Descriptive Price List Mailed on Request.

THE AMERICAN FORESTRY ASSOCIATION

Picture Division

1727 K STREET N. W. WASHINGTON, D. C.

The AMERICAN FORESTRY ASSOCIATION
IN RECOGNITION OF NOTABLE AID RENDERED IN FURTHERING THE CAUSE OF FOREST CONSERVATION IN BEHALF OF THIS AND FUTURE GENERATIONS OF AMERICANS HEREBY DESIGNATES
A LIFE MEMBER
AND IT DECLARES THAT THIS HONOR IS CONFERRED UPON ONLY SUCH PERSONS AS HAVE GIVEN DISTINGUISHED ASSISTANCE TO THE ASSOCIATION OR THROUGH IT TO THEIR COUNTRY.
SECRETARY
PRESIDENT

A GOOD INVESTMENT

Life Membership in The American Forestry Association costs only $100.00, and carries with it a life subscription to the monthly publication, AMERICAN FORESTS, in addition to a fully paid-up membership in the Association.

A FEW OF THE ADVANTAGES ARE:

TO YOU	*TO YOUR ASSOCIATION*
1. A definite saving in dollars and cents.	1. Saves cost of collecting dues.
2. Insures your receiving AMERICAN FORESTS and all other literature issued by the Association for life.	2. Creates a permanent endowment.
3. Eliminates keeping record of date to which dues are paid.	3. Permits an expansion of the work.

Save time and money and help your Association by taking out a Life Membership today.

THE AMERICAN FORESTRY ASSOCIATION

1727 K Street, Northwest, Washington, D. C.

(Further information upon request)

Government Control of Forests in Portugal Extends to Private Land

In Portugal the Government controls forest management on communal land and also on private land within areas the reforestation of which is declared to be a public benefit. Private owners of land not included in such areas who wish to reforest their land or to manage it for sustained yield may choose to have their operations supervised by the Government. Communal lands under the management of Government foresters total about 48,164 hectares; private lands on which forestry management is supervised by the Government aggregate 196,384 hectares.

Communal forests of great extent and great value are said to have existed in Portugal in the past on land now deforested and used only for pasture. At such a rate as its resources and personnel permit the national forest service is undertaking the reforestation of denuded communal lands entirely at Government expense, guaranteeing to the communes that in the future revenue will be proportional to expense and to the estimated value of the land. While the improvement of such land is in process the Government engages to pay into the communal treasury an annuity corresponding to the average revenue from the land during the ten years preceding the initiation of the forestry work. This annuity usually amounts to very little or to nothing at all, since most of the communes exercise no proprietary rights over their waste land.

In the case of lands placed under the management of the forest service at the owner's volition, the task of the forest service is merely to see that the owner adheres to a plan of management to which he has agreed.

Portugal's forest resources are still sufficiently extensive that the nation exports greater quantities of wood products than it imports. Forest stands occupy twenty-two per cent of the country's total area. Nevertheless, according to the estimate of Director General of Forests Borges, reforestation is needed on nearly 30,000 hectares of dune land and 1,200,000 hectares of mountain land.

Excellent results have been obtained on twenty areas where reforestation work has been initiated by the Government since 1901. Recent action of the Legislature of Portugal provides for extension of this work.

Lumber Market Studied

More than one-third of the lumber wholesalers in the United States buy their lumber entirely or in part from portable or other small sawmills, according to the United States Forest Products Laboratory, at Madison, Wisconsin, based on a survey just completed.

It was found that of approximately 4,000 wholesalers throughout the United States, nearly 1,400 buy their lumber wholly or in part from portable or other small mills.

The location of the wholesalers of small-mill lumber is apparently influenced by the location of both supply and consumption, but mostly by the latter. For example, Pennsylvania, which is both a consuming and a producing state, leads the country with 139 wholesalers.

It is followed by the consuming states: Illinois, Ohio and New York, with ninety-nine, ninety-one and eighty-seven, respectively, and then by producing states, Alabama and Missouri, with about seventy each. In sixteen states there are only from one to ten dealers in small-mill products, but in each of twenty-four states there are more than twenty-five dealers.

The majority of wholesalers of small-mill lumber also buy ties, piling, and dimension stock from the small mills, the returns show.

FRONT PAGE FOR BOYS AND GIRLS

(*Continued from page* 614)

"An interesting and profitable part of the Ohio 4-H club activities was the gathering of more than 500 bushels of black walnuts. These were sold with the hulls on for fifty cents a bushel to the Ohio Forestry Department returning a sum of $250 to the club members. There are many other examples of club members making money from their club activities.

"From every State conducting 4-H forestry club work come illuminating reports of progress. We view this club work with great encouragement. The unflagging energy and enthusiasm of the forestry boys and girls indicate great promise in this group of young people. There is no need for eloquence or moving phrase about their accomplishments. It is sufficient to cite the inquiry, the self-expression and actions of the forestry club members. These bespeak of all that is progressive and beautiful in the unfolding of truths about the wonders of the woodland."

THE ECONOMIC STATUS OF SOUTHERN PINE

(*Continued from page* 598)

bilities, so that every producer, distributor and consumer of lumber might know the economic conditions prevailing at all times.

With accurate information of this kind constantly available, it will be possible for the industry always to act in the light of the facts and it is unlikely that mistakes which have occurred in the past, such as the opening up of new producing sections in the West prematurely, will be repeated. It is thought that lumber statistics can best be gathered by the already established regional associations of lumber manufacturers. These associations have ample facilities and an intimate knowledge of conditions within their industry for compiling regularly lumber statistics and making occasional economic surveys.

The southern pine region also is strongly of the opinion that in a natural resource industry like lumber, it should be possible for the manufacturers to balance production with the current demand for its products, provided that this be permissible only during periods when excessive production can be proved. It is certainly reasonable to assume that the intent of the Sherman law was to prevent monopolies growing out of the limiting of the supply of any commodity by its manufacturer to a level below the actual demand or consumptive requirements of this country, thereby creating a shortage and resulting in excessively high prices. Our industry feels that the Timber Conservation Board could assist materially in moulding public sentiment in this respect, to the end that the Sherman law be amended so as to permit industry to balance its production with demand during periods of depression.

As the growing of timber will depend not alone upon the large landowner, but upon the farmer as well, it seems necessary that there be available public forms of financing long-term forest conversion and reforestation enterprises. During 1930, the Forest Service conducted a study in the South of small mill financing, and it recommended as worthy of study the meeting of the financial pressure on the farmer by extending loans by farm land banks specifically on growing timber.

Any remedial measures for the lumber or any other industry should be as much in the interest of the public as of the industry involved. None of the recommendations of the southern pine region contemplate class legislation or strictly selfish ends. In the matter of taxation it is obvious that before any changes can be made in our state and local systems the public must be convinced of its interest in the matter and the extent to which it will profit as a result of such changes.

The right of the manufacturers to control production during times when demand is far below the industry's output can result only through a change in our antitrust laws, which obviously would provide for Government knowledge and approval of such action during times of stress. It must be borne in mind that highly competitive conditions prevail in the lumber industry. Even though amalgamation of properties and concentration of sales would reduce the number of competing units in each producing section, there would still be sufficient competition to assure a free interplay of economic forces and an absolute lack of restraint of trade.

Horace Albright Completely Recovered

Friends of Director Horace M. Albright, of the National Park Service, who were greatly concerned when they read in the morning papers of July 28th that he had been seized with a sudden attack of appendicitis while in Mount McKinley National Park, Alaska, and taken by airplane to Fairbanks, will be reassured to know that he has completely recovered, and has resumed his field work and is now in San Francisco.

While in the park Director Albright had planned to make a study of it from the air, as this is the only means by which it can be thoroughly covered at the present time. Fortunately the plane was on hand when he became seriously ill, and he was able to take advantage of this fact to fly back to Fairbanks.

At first Mr. Albright went to the hospital merely for observation, with the hope that an operation could be avoided, and he might be able to join the Appropriations Committee quickly. Unfortunately, after two days in the hospital at Fairbanks, an operation was found to be necessary.

Mr. Albright made remarkably good progress from the start, and by August 15 was able to return to Mount McKinley National Park, where he spent nearly a week convalescing.

The World's Tallest Hotel

46 STORIES HIGH

2,000 Rooms, $2.50 Up

Rooms are typical of luxury itself—yet rates are reasonable. Each room is outside with bath, circulating ice water, bed-head reading lamp and servidor. Nearest hotel in Chicago to stores, offices, theatres and railroad stations. Excellent garage facilities for guests with cars.

MORRISON HOTEL

CLARK AND MADISON STS.
CHICAGO
Leonard Hicks, Managing Director

FOREST TREES
of the
District of Columbia

A pocket manual of 64 pages, containing illustrations and distinguishing characteristics of 63 trees. How to know them. Where to see them.

Over 8,000 copies have been sold
30 cents, postpaid

THE AMERICAN FORESTRY ASSOCIATION
1727 K St. N. W. Washington, D. C.

AERMOTOR FIRE TOWERS

Afford the best means for locating forest fires quickly. They are also attractive Observation Towers..... The picture shows a 60-foot **Aermotor** tower when visited by the Ohio Forestery Association. These towers are safe and easy to climb.

36-page booklet free by writing to

AERMOTOR CO.
2500 Roosevelt Road
CHICAGO

Index to

ADVERTISERS

OCTOBER, 1931

Aermotor Company 639
Aiken, George D. 630
American Telephone & Telegraph Co. ..... 2nd Cov.
Anderson, Rev. A. F. 631

Ballard & Company, J. O. 627
Blue Ridge Park Nurseries, Inc. 631
Bristol, H. R. 631

Central Maine Forest Nursery 631
Connecticut Forestry Nurseries 631
Coolidge, P. T. 636
Craggy Mountain Club 626

Fechheimer Brothers Company, The 637
F. & F. Nurseries 629
Fleu, Conyers B., Jr. 631
Franklin Forestry Company 631
Freeman-Thompson Shoe Company 624
Fruitland Nurseries 631

Gable, Joseph B. 631
Glen Brothers, Inc. 631

Hanna, Phil W. 625
Hardy Evergreen Gardens 635
Harvard Forest 632
Hill Nursery Compay, D. 631
Hirsch-Weis Mfg. Co. 625
Hough Company, R. B. 626

Jonas Brothers 624
Jones Nurseries, J. F. 631

Keene Forestry Associates 631
Kelsey Nursery Service, F. W. 629
Kelsey Nursery Service, F. W. 631

Lacey & Company, James D. 636
Lager & Hurrell 631
Lee & Company, George S. 626
Liggitt & Myers Tobacco Co. ..... 4th Cov.
Loganbrae Kennels 624
Long Bell Lumber Company 634

Madden, B. L. 636
Madden, B. L. 634
Mears, A. H. G. 627
Morris Nursery Company 630
Morrison Hotel 639
Morro Castle Tours 626

Naperville Nurseries 631
N. Y. State College of Forestry 633
North-Eastern Forestry Company, The 631

Oronogo Flower Gardens 631

Rich, C. H. 634

Smith & Company, D. B. 635
Smith-Gray 635
Stoeger, Inc., A. F. 624

Tabor Company, R. H. 636
Terrell's Aquatic Farms 624
Tuttle, Morehouse & Taylor 636

University of Idaho School of Forestry 633
University of Maine Forest School 632

Western Cartridge Company 623
Western Maine Forest Nursery 631
Wisconsin Aquatic Nurseries 624
Wohlert, A. E. 630
Woods Manufacturing Co., Ltd. 627

Yale School of Forestry 632

"WHO'S WHO" AMONG OUR AUTHORS

Ben Ames Williams

BEN AMES WILLIAMS (*Treasure Trove*), well-known in the literary world for such works as *Evered*, *Black Pawl* and *Great Oakes*, is an ardent conservationist, particularly in the preservation of wild life. Following his graduation from Dartmouth College in 1906, he was associated for six years with the *Boston American*. His first story was published in 1914. He makes his home in Newtonville, Massachusetts.

S. W. GREENE (*The Forest That Fire Made*) is in charge of the Coastal Plain Experiment Station, of the Division of Animal Husbandry, United States Department of Agriculture, at McNeel, Mississippi.

T. J. MOSLEY (*A Forest That "Just Growed"*) is technical reviewer of the staff of the Forest Products Laboratory at Madison, Wisconsin. A former Rhodes Scholar, he became associated with the United States Forest Service after serving with the Bureau of Standards and the Navy Department.

ROBERT I. HEWITT (*Timberline Trails*) spent his early boyhood on a cattle ranch in the Bitterroot Valley of Montana. Later, he writes, "I was exposed to a course of forestry at the University of Montana." He is now associated with a power construction company in Boston.

Robert I. Hewitt

MAJOR WILLIAM H. HOBSON, U. S. A. (*A Chip Off the Old Block*) when not engaged in the problems of military life, is following the lure of forest and gun. A staunch believer in wise conservation of both the forests and wild life, he has devoted much time writing about them. He is a native of Tennessee, and the Great Smokies have been his playground for years.

John C. Frolicher

JOHN C. FROLICHER (*Ever the Chase*) is secretary of the Montana Sportsmen's Association and educational secretary of the Montana Fish and Game Commission. A native of Montana, he has been lumberjack, timber cruiser, miner, forest guard, and of late years a newspaperman.

Cary A. Rowland

CARY A. ROWLAND (*A City Man Tries Forestry*) is an advertising man with headquarters in New York. He finds time to follow his chief hobby, however, in practicing forestry on a small area almost within the city limits. He is a graduate of the University of Michigan and Cornell University.

H. J. DODD (*Foxfire*) is associated with the Bureau of Plant Industry of the United States Department of Agriculture. He is a native of Delaware. Next to his work, which has to do with certain phases of fruit diseases, Mr. Dodd claims he likes to write and take pictures.

HENRY E. HARDTNER (*The Economic Status of Southern Pine*) is president of the Urania Lumber Company, in Louisiana. As former state senator, he has long taken an active interest in forestry.

HOMER L. JACOBS (*Fertilizing Shade Trees*) is instructor in Tree Fertilization in the Davey Institute of Tree Surgery, at Kent, Ohio, and research worker in charge of shade tree fertilization.

GLENN E. MITCHELL (*The Lost Hunter of Lake Chelan*) is a forest ranger with the United States Forest Service in the State of Washington.

FRED H. KISER (*Through the Lens*) who makes his headquarters in Los Angeles, California, continues with his interesting photographic series.

WAKELIN MCNEEL (*A Forest Page for Boys and Girls*) of Madison, Wisconsin, well known figure in 4-H Club work, continues his feature for boys and girls.

JAMES HAY, JR. (*The Smartest Thing My Dog Ever Did*) is a writer and newspaperman of Washington, D. C.

EUGENE A. HANCOCK (*Giant Pinons Find a Champion*) is news editor of the *Fort Collings Express-Courier* in Colorado. At one time he was professor in journalism at Wilamatta University, in Oregon, and at the Colorado Agricultural College. As a writer of note he has published many articles and verse.

Eugene A. Hancock

The American Forestry Association

1727 K STREET, NORTHWEST

Washington, D. C.

President
GEORGE D. PRATT

Treasurer
GEORGE O. VASS

Assistant Treasurer
I. J. ROBERTS

Executive Secretary
OVID BUTLER
1727 K Street N. W.
Washington, D. C.

Forester
G. H. COLLINGWOOD

Business Manager
FRED E. HORNADAY

New York Office: 468 Fourth Avenue

Vice Presidents

STANLEY COULTER—Indiana
Conservation Commission of Indiana
DR. HENRY S. DRINKER—Pennsylvania
President Emeritus, Lehigh University
DR. DAVID FAIRCHILD—Florida
Agricultural Explorer, United States Department of Agriculture
GLENN FRANK—Wisconsin
President, University of Wisconsin
JAMES R. GARFIELD—Ohio
Chairman, Commission on Conservation of the Public Domain
ALLEN HOLLIS—New Hampshire
President, Society for Protection of New Hampshire Forests
MRS. HERBERT HOOVER—District of Columbia
POSEY N. HOWELL—Mississippi
Mississippi Forestry Commission
STAFFORD KING—Minnesota
American Legion
R. A. LONG—Missouri
Chairman, Board of Directors, Long-Bell Lumber Company
MRS. J. WILLIS MARTIN—Pennsylvania
Garden Clubs of America
JACK MINER—Ontario, Canada
Wild Life Protector
DR. E. W. NELSON—District of Columbia
Former Director, United States Biological Survey
PETER NORBECK—South Dakota
United States Senator
JOSEPH HYDE PRATT—North Carolina
North Carolina Forestry Association
ARTHUR H. VANDENBERG—Michigan
United States Senator
GEORGE E. VINCENT—Illinois
President, Izaak Walton League of America
PHILIP WEYERHAEUSER—Idaho
General Manager, Clearwater Timber Company
WILLIAM M. WHEELER—California
President, California Forest Protective Association
MRS. FRANCIS E. WHITLEY—Iowa
General Federation of Women's Clubs
SINCLAIR WILSON—Oregon
Chairman, Forestry Committee, Oregon Bankers' Association

Board of Directors

J. E. ALDRED, 1931—New York
Pennsylvania Water and Power Company
F. W. BESLEY, 1935—Maryland
State Forester of Maryland
W. R. BROWN, 1934—New Hampshire
Chairman, New Hampshire Forestry Commission
C. ARTHUR BRUCE, 1935—Tennessee
Director, Hardwood Manufacturer's Institute
HENRY SOLON GRAVES, 1932—Connecticut
Dean of Yale Forest School
WILLIAM B. GREELEY, 1933—Washington
West Coast Lumbermen's Association
W. B. GREELEY, 1931—New York
Camp Fire Club of America
A. S. HOUGHTON, 1934—New York
New York State Reforestation Commission
JOHN C. MERRIAM, 1931—District of Columbia
President, Carnegie Institution of Washington
JOY MORTON, 1933—Illinois
Founder, Morton Arboretum
GEORGE H. MYERS, 1934—Washington, D. C.
GEORGE W. SISSON, JR., 1935—New York
American Paper and Pulp Association
LOUIS J. TABER, 1933—Ohio
Master, National Grange
W. D. TYLER, 1932—Virginia
Southern Forestry Congress
WILLIAM P. WHARTON, 1932—Massachusetts
National Association of Audubon Societies

What the Association Is Working For

ADEQUATE FOREST FIRE PROTECTION by federal, state, and other agencies, individually and in cooperation; the REFORESTATION OF DENUDED LANDS, chiefly valuable for timber production or the protection of stream-flow; more extensive PLANTING OF TREES by individuals, companies, municipalities, states, and the federal government; the ELIMINATION OF WASTE in the manufacture and consumption of lumber and forest products; the advancement of SOUND REMEDIAL FOREST LEGISLATION.

The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

PRESS OF
JUDD & DETWEILER, INC.,
WASHINGTON, D. C.

Member A. B. C.

Copyright, 1931, by The American Forestry Association

GOOD . . they've got to be good!

Fred and Adele Astaire in Broadway's musical hit, "The Band Wagon"

Darn good—you'll say!

Everybody wants a mild cigarette. And when you find one that is milder and *tastes better* too—you've got a smoke! Chesterfields are so much milder that you can smoke as many as you like. Mild, ripe, sweet-tasting tobaccos — the best that money can buy. That's what it takes to make a cigarette as good as Chesterfield. And the *purest* cigarette paper!

Every Chesterfield is well-filled. Burns evenly. Smokes cool and comfortable. *They Satisfy* sums it all up!

EVERYBODY'S GETTING ON "THE BAND WAGON"

©1931, Liggett & Myers Tobacco Co.